THE MEDICAL JOURNAL OF AUSTRALIA

VOL. II.—35TH YEAR. SYDNEY, SATURDAY, JULY 10, 1948. No. 2.

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The Beattie-Smith Lectures.[1]

(THE UNIVERSITY OF MELBOURNE.)

SOCIAL HEALTH AND PSYCHIATRIC SERVICE.

BY ALAN STOLLER,
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LECTURE II.

SOCIETY has arisen as a result of man's strivings, but in the building up of this structure restraints have been perforce produced which have clashed with those individuals whose instinctual urges are not integrated with and under intellectual control. This basically psychological conflict underlies social problems that are brought out by those sociological factors which affect the morale of the individual. From time immemorial attempts have been made to formulate the ideal social order, and nobody yet has bettered Plato's conception of one which satisfies man's insistent impulses towards self-realization. Modern conceptions of mental hygiene are nothing more or less than this—so to control the conditions of life as to encourage and develop to the optimum the constructive potentialities of the individual, so that there is attained a progressive enrichment of both personal and inter-personal harmony. We would accordingly agree with Emerson that "the true test of civilisation is not the census, nor the size of the cities, nor the crops, but the kind of man that the country turns out". But, if we wish to attain to a stable society, we must not leave our problems unformulated, uninvestigated and untreated. We must ever remember that "Destiny is not a matter of chance, it is a matter of choice; it is not a thing to be waited for, it is a thing to be achieved".

I have already stated a problem which you have seen is a considerable one, and affects the very structure of our society. We have been made aware of the large number of chronically ill individuals who throng the out-patient departments of general hospitals, or if financially able to do so, wander from specialist to specialist in a vain endeavour to escape from the consequences of inner conflict. There are others who vainly seek comfort in the magic ministration of the patent nostrum, consult unqualified practitioners, or seek the comfort of one of the numerous faith-healing cults. At any one time in Australia there are 30,000 people in mental hospitals; but beyond this, there are in the community large numbers of psychopaths, eccentrics, alcoholics and sexual deviates, all of whom are potential disturbers of public morality and social stability. There are many of subnormal intelligence who require community care, breed prolifically and often give rise to problem-families. Society has to cater for a large number of criminals, some of whom will benefit by psychiatric treatment. Moreover, there are many children with behaviour problems, for whom psychiatric aid needs to be enlisted, and one finds this latter requirement not only in schools and universities, in courts and prisons, but also in industry, in welfare agencies and in general health services, where there is a constant stream of psychiatric problems necessitating specialist aid.

Psychiatry has much to offer in the amelioration of mental ill health in the individual case, but it can also offer suggestions for a plan of mental hygiene which should prevent the onset of many of these individual disorders. It is very much easier to nibble away piecemeal at a problem than to deal with it comprehensively; but that the latter method can be used effectively has been shown by the reports of the army directors of psychiatry for both the United Kingdom (Rees[447]) and the United States of America (Menninger[448]). From our army experience we have appreciated what group factors are

[1] Delivered at Melbourne on April 19 and 26, 1948.

involved in individual morale, and have obtained some understanding of group interrelationships generally. Application of this knowledge to problems of mental health, such as the proper placement of personnel, the development of a better public attitude to and a better understanding of mental processes, and a coordinated scheme of mental hygiene, have produced positive results, not only in the adjustment of those already mentally ill, but also in the prevention of mental morbidity.

Dale Groom[45] sums up the outlook for psychiatry in a few pertinent words:

> Obviously the future of psychiatry lies not so much in the salvage of . . . patients who crowd mental hospitals as in the applications of psychiatry in all patients. And perhaps in this atomic age, when such questions as "Is the human mind outmoded?" are arising, this relatively young branch of medicine may be increasingly looked to for contribution toward the solution of problems of social as well as medical significance.

Let us first examine the question of the integration of psychiatry and general medicine and see how it may best be encompassed. Psychiatric problems in general medicine are far too numerous, and psychiatrists are far too few in number, for these problems to be divorced from the general practice of the medical art; such a process would, in any case, be most undesirable. What is needed is a reorientation of medical outlook, and this, of course, is bound up with the whole system of medical education. The place where this problem must be tackled is the medical school, where psychiatry should be taught as an integral part of the curriculum rather than as a speciality, and both social and psychological factors should be evaluated in each case demonstrated. Psychology should be as basic a subject as anatomy and physiology, and teaching should be linked up with a department of social medicine. It is at present estimated[39] that only 4% of the curriculum is devoted to psychiatry, which hardly tallies with its importance in practical clinical medicine. Porter and Davidson[49] investigated the opinions of 412 practitioners who had graduated since 1940 from 69 medical schools of North America, and the major criticism of medical education which they offered was that they did not see enough psychoneurotic and other minor psychiatric cases, which they found constituted such a large proportion of their daily case load in practice. They also emphasized the lack of social and theraputic follow-up of patients during their training period. Bennett[50] has done medicine a service by emphasizing in statistical form the lack of psychiatric orientation. He undertook a detailed study of 150 psychoneurotic and psychotic individuals who had had 811 courses of surgical and medical treatment, including 244 surgical operations, without benefit; yet even at this late stage, psychiatric treatment resulted in improvement or recovery in 122 of the 150.

Lewis[51] considers that one should aim at making the student capable, after four years in medical school, of recognizing the usual pictures of mental symptomatology, including the emotional concomitants of organic illness; of being able to handle them practically and decide which should be referred to a psychiatrist; and finally, of having enough legal and social knowledge to be able to look after the patient, his family or the interests of society. Any further expansion of this basic psychiatric knowledge is a post-graduate matter.

As an immediate short-term policy, intensive post-graduate courses in psychiatry for medical practitioners should be instituted. A careful experimental study[53] on 23 general practitioners who took a two-weeks course at the University of Minnesota, gave results which were generally satisfactory; it was agreed that the greatest single gain recorded was undoubtedly the appreciation of emotional factors in medical practice. Wearn[4] tells us of the reorganization of the curriculum at the school of medicine of the Western Reserve University, where the pre-clinical foundations of psychiatry are given in the first two years; in the third and fourth years, instruction in psychiatry is closely integrated with other medical departments; further psychiatric training is carried on through residencies and internships, and each intern spends four months, early in his internship, at a mental hospital. Amongst other schools in United States of America which are tackling this problem must be especially mentioned that at Yale, which has reorganized its psychiatry department, increased the instruction available for medical students, established training residencies for psychiatrists, and increasingly shifted the emphasis of the Yale Institute of Human Relations Clinic to psychoneurotic disorders; patients are cared for jointly by psychiatric and general medical staff, the latter coming from the Yale School of Medicine, and post-graduate seminars are arranged. What is most gratifying to note in the psychiatric reorientation is the emphasis on the broader aspects of mental health in the community, for close cooperation will be effected with the Yale Divinity School, the Law School, the Institute of Human Relations, the Department of Psychology, the Department of Public Health and the psychiatric division of the Yale Department of University Health.[53] The Royal College of Physicians of London,[54] in its report on student education has recommended attendance at 53 psychiatric lectures and demonstrations at psychiatric out-patient departments for a period of three months concurrently with other specialties, and has even recommended domiciliary visits with psychiatric social workers; a short resident appointment in a mental hospital or in the reception ward of a general hospital has also been considered necessary.

Professor W. S. Dawson[55] is of the opinion that "the teaching of the psychological aspects of somatic symptoms must be the responsibility of physicians and surgeons". With this one would agree, except that experience has shown that many such teachers are not yet ready for this role. There is accordingly a need for psychiatrists (in collaboration with other clinical teachers) to undertake the initial steps in encompassing the reorientation. Unfortunately, the number of psychiatrists at present is hopelessly inadequate for any expansion of present activity to be envisaged; there are not even enough to cope with the present work available. For instance, one mental hospital in Australia which I visited recently had only two psychiatrists for 1200 patients. There is an immediate and absolute need to train suitable psychiatrists of high standard, and it is necessary for some responsible body, such as the Australasian Association of Psychiatrists, to estimate needs and make recommendations to bring this about forthwith. It is just as important for psychiatrists to have a good general medical background as it is for general physicians to have psychiatric experience. Accordingly, after basic training in general medicine, psychiatrists should obtain experience in mental hospitals and in mental observation wards in general hospitals, as well as in out-patient and child-guidance clinics, and opportunity must be given for concurrent neurological experience. It is necessary, in this training period to obtain a realization of the working of the "psychiatric team", which employs besides psychiatrists, psychiatric social workers, clinical psychologists, psychiatric nurses and occupational therapists.

This "psychiatric team" is the foundation of modern psychiatric practice, and in its integrated form it can deal with any form of mental disorder. The psychiatrist on his own can deal with many cases; but, in order to be able to give of his best to all patients he must have the ancillary investigative adjuncts of psychological testing and sociological investigation, and must be able to adjust the social environment of the individual, even to the extent of fitting him for a new occupation. Each member of the psychiatric team plays his part in the rehabilitation of the individual. In order to bring Australia into line with world developments, it is necessary to see that sufficient numbers of adequately trained specialist personnel for the psychiatric team are readily forthcoming; and as I demonstrate how increasingly important is the role which psychiatry is to be called upon to play in the life of the community, the need for a big effort to encompass this primary requirement will become obvious.

The clinical psychologist bears to the psychiatrist the same relationship as the radiologist does to the physician and surgeon; and we are yet at the beginning of a

fruitful collaboration which should not only aid in the management of the individual case, but eventually help us to revise our Kræpelinian nosological ideas and bring them more into line with our present conception of the dynamic ætiology of mental disorder.[56] The clinical psychologist needs to receive a comprehensive course of training with psychiatric patients, since the latter show distinctive patterns which require special handling and interpretation. University training in Australia gives psychologists some clinical experience, but there is no special post-graduate course for clinical psychologists; such courses need to be provided soon if the social aspects of medicine are to be satisfied.

The psychiatric social worker needs to be a highly-qualified person with a special understanding of human nature and an applied knowledge of human behaviour. She normally has at least four years' university training, which includes one year's practical psychiatric experience "in the field". The value of her efforts in collecting social data and in making social adjustments is undisputed; but there is still some controversy amongst medical men as to her exact therapeutic role. I would consider that her relationship to the patient and family is such that a psychotherapeutic situation is automatically established; the mere adjustment of the patient to, say, the acceptance of a social change necessitates a degree of psychological *rapport;* and it has been my experience that patients have benefited considerably by a simple alteration of family attitudes or by simple commonsense psychotherapy applied to a maladjusted relative. If the psychiatric social worker is suitably chosen and adequately trained—these being both crucial points—then there is, to my mind, no reason why these procedures should not be followed; but under no circumstances should depth psychotherapy be undertaken. There are fewer than ten psychiatric social workers throughout the whole of Australia, and one realizes how ridiculous this number is when one is informed that the team required by the Veterans' Administration (United States of America) to carry an out-patient case load of 50 patients at any one time consists of two psychiatric social workers in addition to the psychiatrist and clinical psychologist.[57] There is no training course in Australia as yet available, and all psychiatric social workers have so far been trained overseas; the University of Sydney, however, expects to institute such a course shortly, and it is hoped that other universities will follow suit. An indication of the growing importance of social work is shown by the statement that, in the 12 schools of psychiatric social work in the United States of America, all courses are crowded and many intending trainees are being turned away; moreover, consultants in this field have been appointed to the National Committee for Mental Hygiene (United States of America) and to the United States Public Health Service. There is room for male trainees in this field; they have a special advantage, in that the male establishes contact with industry more readily.

Psychiatric nurses should be highly-trained personnel with good basic general training, since psychiatry, as it deals more and more with earlier and milder cases, is extending into the field of the general hospital, is escaping from its purely custodial role, and, in line with its *rapprochement* with general medicine, is utilizing the procedures of the latter to a greater extent. There is no training course for nurses in Australia outside the State mental hospitals departments, and standards naturally vary between the different States; because of the association with the "chronic" mental hospital there is little opportunity for experience in general nursing and in modern physical therapies, and the greater bulk of the training consists merely of the supervision of potentially difficult patients. I consider that there is a definite need for a general Commonwealth registration for mental nurses, and for a nation-wide standard of training for the mental nursing certificate, with interchangeability between all States. Many generally trained nurses, as a result of their military experience, developed an interest in psychiatry and have been keen to take up this form of nursing as a specialty. There has unfortunately been no opportunity for such a programme; but Victoria is about to set a lead in instituting a post-graduate training scheme which will provide a certificate in psychiatric nursing equivalent to the certificate in tuberculosis nursing. Probationer general nurses require more basic training in the psychiatric aspects of illness; it is very difficult to credit that a few lectures on mental disorders are thought to qualify a nurse for the very intimate contact which she needs to maintain with the patient throughout the larger part of the day; not only is it necessary to use psychology to manage the patient, but psychological training is of value in both assessment and treatment of the patient, when signs of psychological disturbance can be observed and reported to the doctor.

Occupational therapists are still in short supply, though this shortage is not so absolute as that of the other members of the psychiatric team, since courses are conducted both at the Universities of Sydney and Melbourne. Trained occupational therapists are needed in mental hospitals, in general hospitals and in rehabilitation centres. When they are asked to deal exclusively with psychiatric cases, a post-graduate practical course with special emphasis on psychiatry needs to be given. Menninger[58] considers that rehabilitation has been one of three outstanding contributions to psychiatry which has resulted from the recent hostilities. The Veteran's Administration (United States of America) has departments of physical medicine in all neuropsychiatric units, with occupational therapy as an integral part of this programme.[59][60] Occupational therapy is utilized as a specific treatment (such as the use of bright colours and short varied tasks for schizophrenics),[61] for its physical and psychological effect in the convalescent state, and for prevocational training when vocational rehabilitation is needed.

I have already indicated to you how backward are the mental hospitals; this is a combined result of the historical accidents of development and the parsimonious attitude of State authorities. These hospitals that we see today, with all that is in them, are man-made creations, monuments of dead stone and near-dead humanity. Amongst many who should know better, there still exists the attitude that here are human animals who need to be shut up because of their nuisance value; but many of them could live in the community with some social readjustment and some social support. We must not forget that superimposed on mental disorder in these institutions is often a secondary isolation psychosis; if the patient fails to recover within a year he is relegated to a "chronic" ward, where there are too few nurses to give him personal attention, where there are so few doctors that they can only attend to his immediate physical illnesses, and where he will sink more and more into a hopeless withdrawn state or will compensate by the evocation of more florid phantasies. In some of the better types of mental hospital there are open wards and other wards devoted to active treatment of more recent disorders, and on the whole, there is an increasing tendency to utilize long-term occupational therapy; but it must be impossible to provide proper treatment when there is usually only one doctor to 300 patients or more. It is essential, if the problem of the chronically insane is to be tackled, that the public attitude should be altered; mental illness should not be regarded as something of which to be ashamed—something to be hidden from the public gaze; unless the general public takes an active interest in the welfare of the mentally ill and actively agitates for improved therapeutic facilities for all such people, politicians will follow the same pattern of financial restriction as in the past. New hope has been given to alienists by the work of the Veterans' Administration (United States of America) whose programme of active rehabilitation and resocialization, applied to "chronic" patients, has produced surprising results; for instance, in one recent month, out of 5500 persons discharged from neuropsychiatric hospitals, 1400 were veterans of the first world war, averaging fifty-four years in age, and averaging more than five years in hospital.[57] This has been encompassed by increasing the staff, though the optimum requested—one physician to approximately 30 patients, one nurse for 20, one attendant for five, one social worker for 112 and one psychologist for 350—has not been attained. Roanoke Mental Hospital, Virginia, for instance, has 41 resident doctors (28 are

army physicians), with 30 consultant medical and surgical specialists, for 1850 psychiatric and 150 general medical and surgical beds; full radiological and pathological diagnostic facilities are available; there are seven social workers, and a rehabilitation team which organizes educational retraining, corrective physical rehabilitation, occupational therapy, physiotherapy and vocational training.[62] One must, of course, note that there is a larger influx of more recent cases in this hospital than in the usual "chronic" mental hospital, and there is a big turnover of patients; but the important thing to realize is that this big turnover perforce reduces the amount of immediate and future psychiatric morbidity in the community, besides lessening the number of "chronic" mental hospital beds required; and, since the last-mentioned is a continually expanding factor, the economic saving more than justifies any immediate expenditure on increased therapeutic facilities. We, with our British cultural heritage, make haste more slowly than our overseas cousins, and whilst we would perhaps not at once apply such extensive facilities for our own mental hospitals, no one could deny the necessity to expand therapy and rehabilitation beyond their present standards, and to provide additional personnel for this purpose.

I would particularly stress, at this point, the value of the intermediate hospital, which should be an integral part of an over-all mental health scheme, and if operated as an adjunct to a general medical service, could avoid the stigma which is attached to the "chronic" mental hospital. I can visualize such hospitals in every capital city, with attached out-patient, child-guidance and rehabilitation units. They should be accessible to the main populous areas, otherwise they will become detached from the normal activity of these areas; people who go to these hospitals for treatment of mental disorder will not feel so much that they are being "put away". I would again reiterate how important it is for these activities to be considered part of, and as respectable as, those of the general medical and surgical units, and the public should be educated accordingly.

It is now realized how important is the "resocialization" of the mental patient, and for this purpose any therapy, whether in a mental hospital or in an out-patient clinic, must include group activities. In some mental hospitals overseas, social clubs are formed which are run by the patients themselves, and the community-feeling which is engendered produces a favourable medium for all other forms of therapy. It is essential, in every possible way, to maintain contact with society and to prevent those superimposed secondary isolation and deprivation effects which result from social segregation.

The provision of after-care and "boarding out" is an essential part of any comprehensive mental service, since it is one way of keeping individuals in the community as at least partly productive units. In order to prevent breakdown after discharge from mental hospital, the ex-patient often has to be temporarily supervised and tided over this initial readjustment, and it is the psychiatric social worker who is required to carry on with the work which has been done in the hospital. She enlists the aid of after-care organizations, which are sporadic and poorly developed in Australia and cannot compare with the National Council of Mental Health (United Kingdom), or with the National Committee of Mental Hygiene in the United States of America. The former organization has been produced by the amalgamation of a number of voluntary organizations concerned with after-care and mental hygiene, and is to be a fundamental part of the national health scheme; during the war, the value of the work of these organizations was effectively demonstrated in the supervision of mental defectives and remitted psychotics, in dealing with the many problem children resulting from the disruption of family life by war, and in aiding the resettlement of service neurotics. Pollock[63] estimates that it is possible "to use family care for at least one-third of the patients now cared for in institutions for mental defectives and in hospitals for mental disease".

The institution of this service is certainly one way of keeping abreast of the increasing demand for mental hospital beds, even if one were to exclude the humanitarian and economic aspects. An alternative plan is to establish farm colonies or sheltered communities for individuals of reduced social capacity, where economic supervision can be carried out without complete restriction of social intercourse; these should preferably be near populous areas.

Certain mental hospitals in other countries, such as the county mental hospitals in England, have been expanding their activities to embrace out-patient work in general hospitals, and some are even running child-guidance clinics, though in the main the last-mentioned are the responsibility of public health and educational authorities. The most fruitful result of this extension out from the mental hospital is the effect on the outlook of the psychiatrist, since, no longer being mentally bound by the walls of the asylum, he can see the larger community problem. Through the general hospital he can help with the psychosomatic cases, and can benefit by association with other branches of medical art; through the experience of social work, he learns to modify his prognostic outlook; and through child-guidance he may prevent later morbidity and can gain an added appreciation of his adult patients.

Arising out of this is the question of who is to tackle the problem of mental health—the mental hospitals department or a department of public health. State mental hospital departments are autonomous units in practice, though some are ostensibly under a larger department of public health. As I have already postulated a necessary integration of psychiatry with general and social medicine, there cannot to my mind be any doubt that ideally psychiatric activities should be part of an over-all scheme of public health. I would draw your attention to the recent provisions of the *National Health Act* of Great Britain, which is due to come into effect shortly; each "region" is controlled by a "health authority", which has a public health committee advised by the local medical officer of health, and a mental committee advised by an expert psychiatric adviser; this health authority in turn is under the supervision of an executive director of medical services who is answerable to the Ministry of Health; in each region, there is at least one teaching and research centre. In the United States of America, in 1946, the *National Mental Health Act* was passed, and a National Advisory Mental Health Council was appointed to act through the United States Public Health Service; the Division of Mental Hygiene of this service has already made numerous grants for research and training in the various States; a survey of existing psychological and psychiatric facilities is being made with a view to the future provision of additional facilities and the promulgation of a scheme of mental hygiene. Australia has, as yet, an inadequate conception of a coordinated scheme of mental health in the individual States, whilst the Commonwealth, except for ex-servicemen with war disabilities who are under the care of the Repatriation Commission, undertakes no mental health responsibilities; it is to be hoped that the overseas developments will act as a stimulus.

It is obvious that most psychiatric therapeutic effort should be concentrated on patients with recent and minor disorders, and this means that an adequate out-patient and general hospital service should be provided for the patient with the episodic breakdown as well as for the chronically maladjusted individual who, in mass, forms that "submerged tenth" of the population, the bane of the general practitioner—a source of manpower-wastage and the initiator of the problem family, which is a drag on society and a reservoir of future neuropathy and psychopathy. There is a great social need, as I have stated elsewhere[64] "for the development of a sense of responsibility in these people—an inculcation of a sense of loyalty to the community; opportunities must be given them for self-expression and self-fulfilment. This, of course, may be expressed in the overworked term 'rehabilitation'". Since out-patient and general hospitals sections would need to link up with the intermediate and mental hospitals, it is essential that the full psychiatric team should be available for all of these. One hopes that no general hospital will be without an active psychiatric department, so that the chronic psychoneurotic may be treated instead of being partially palliated by pill or potion. The average medical

practitioner with a psychiatric approach will prevent many of these disorders from developing; for instance, a patient may initially just require simple reassurance or explanation, a minor social readjustment, or vocational rehabilitation. The whole emphasis in the general hospital should be on active therapy and rehabilitation and the prevention of long-term disorders; occupational therapy here should accordingly be of the short-term specific type; pre-vocational therapeutic facilities must also be available, but vocational guidance would be linked up with the rehabilitation centre, which is part of a community health scheme.

The Ministry of Health in England has recognized that illness has, besides medical connotations, social, economic and psychological aspects; they are aware that the rate of recovery from illness, as was shown for instance in the rehabilitation of orthopædic patients during war, is dependent on mental outlook—that, unless the latter is satisfactory, recovery is slowed or illness is rendered chronic. Hospitals have recognized that the insecurity produced by the consequences of illness needs to be overcome, and, if a person is rendered unfit by illness or accident for his ordinary occupation, he should be retrained for another suitable to his reduced capacity. Accordingly, most of the chief hospitals in England and Wales have established, or are in process of establishing full rehabilitation departments. A scheme of planned activity in hospitals is useful for several reasons: firstly, as specific treatment for established psychiatric dirorders; secondly, in providing an outlet for mental activity in all forms of illness, so that hypochrondriasis, withdrawal or aggression—all reactions which are perceived in patients confined to bed with illness—are controlled. Outside the hospitals, rehabilitation centres have proved their worth. Civil resettlement units for ex-prisoners of war were set up in England, and they were considered so useful that their provisions were extended to all demobilized personnel. The Ministry of Labour has introduced its *Disabled Persons' Employment Act*, which is fully concerned with the problem of the rehabilitation of the chronically ill, and is to be complementary to the activities of the *National Health Act*. It has established a governmental corporation known as the "Disabled Persons Employment Corporation Limited", which is in control of a number of rehabilitation units known as "Remploy" factories, which retain disabled personnel as near to the original conditions of industry as possible; they are entirely non-profit-making. So as to prevent moral and physical deterioration in persons who are unable to attend at these factories, and so as to minimize the secondary effects on the family, a scheme for home-making is also being put into execution. It is estimated, for instance, that 75% of epileptics are excellent citizens, and can perform a satisfactory job so long as they are properly placed.[65] Of considerable significance, both to industry and to those interested in the mental health of the community, is the Roffey Park Rehabilitation Centre, which was established in 1944 at Horsham, Surrey, under the ægis of the National Council for the Rehabilitation of Industrial Workers, to deal with the problem of mental ill-health in industry. It provides regular psychotherapy and group activities, has instituted a full research programme, and has instituted two weeks' training courses for medical personnel, managerial personnel and welfare workers. Its final conclusions are being eagerly awaited, as some of its activities are still experimental; I have little doubt that we shall learn much that will be of practical value to us in industry.

Industrial psychology has already given us much useful information on many of the problems of adjustment; but psychiatry has now to cooperate with psychology in elucidating those problems of human interrelationships which result in gross manpower-wastage, and has to evolve means of dealing with them. Industry has employed psychiatry, mainly in United States of America, since the first world war. Anderson[66] in 1929 showed how the R. H. Macy Company, using a psychiatric team, dealt with the 20% to 25% of nervous disorders which were part of the general medical problem. Besides successfully dealing on the job with 50% of the problem employees, the team was helpful in guiding selection, promotion and placement of personnel. But it was really the shortage of manpower which from 1939 onwards stimulated research into industry and absenteeism, accidents and psychosomatic disorders; some large companies have established full psychiatric departments, other firms have psychiatrists who act in a part-time advisory capacity, whilst still others are arranging for their general medical officers to undergo some psychiatric training. Oak Ridge, Tennessee, was a town which was established during the war and quickly attained to 75,000 souls; it was given a comprehensive psychiatric scheme which provided service in the hospital, in the community, and also within the industrial plants; although it was confirmed that only 10% or so of psychiatric problems were actual job problems, yet treatment on the job led to a definite increase in the number of home adjustments.[67] And so we reach the conclusion that if we wish to advance industrial health, we must pay attention not only to optimum environmental conditions, but also to conditions outside of industry, as part of a general community programme of mental health. America, like England, has recently taken steps to deal with the problem of the sub-standard worker, by the introduction of an act which makes provision for federal grants which will extend the activities of the State Department of Vocational Rehabilitation to include neuropsychiatric patients as well as those who are physically handicapped. In Australia, the Social Services Department is similarly recognizing the need for rehabilitation of the handicapped worker and is to utilize its rehabilitation centres for invalid pensioners; the Repatriation Commission is successfully conducting a comprehensive scheme for the training and placement of mentally and physically handicapped ex-servicemen whose disabilities are attributable to war service.

It was thought at one time that psychological testing of all personnel would help to prevent "round pegs" from getting into "square holes"; but the conditions of civilian life are different from those of the army, where this procedure was very valuable. It is considered that the value of psychology will be in selecting executives and in dealing with persons who are showing signs of maladjustment.

Industry is not the only community activity in which psychiatry can help. The problem of mental deficiency is one which must be tackled comprehensively and with the full cooperation and understanding of society. A mental deficiency service needs to be closely linked with the educational, public health and child welfare departments and must be prepared to train defectives to the optimum; more attention should be paid to adequate emotional and social development than in the past. Mental defectives consist of from 4% to 8% of the population, and signs are that their numbers are increasing. There is little justification for the employment of eugenic procedures, as most cases arise from borderline stock (excluding birth accidents and gross gene-defects), and these would not ordinarily stand out; besides, the relative importance of the environmental factor needs further evaluation before heredity can be unhesitatingly inculpated. Special schools in adequate number must be provided. It is now recognized that numerous children have not developed properly because of unrecognized sensory and spastic defects. Helen Keller is a living example of what may be done in the way of training to overcome sensory defects; moreover, motor defects may inhibit mental development, as is seen in about one in every three spastic children. For the latter, the developments in training all over the world have been one of the most heartening, humanitarian activities of recent times, and owe much to one who was himself rescued from this state—Earl Carlson.

It has been amply demonstrated that crime is a considerable problem in our form of civilization, and it is apparently increasing *pari passu* with the disorganization of the community; the increase is mainly in those under thirty years of age. I have already pointed out how, in certain communities, there is no problem associated with the acquisition of possessions, whilst in others this process is exaggerated to the point of paranoid behaviour. A general improvement in the mental health of the community will automatically result in a reduced rate of crime, and this should be the true goal. We must not

forget how often recidivists are found to have had a poor early environment; the asocial behaviour can be traced back to early days and is due to the childhood attitude developed towards the family. But even now psychiatry can be of some value in providing a therapeutic service; of confirmed offenders, it appears that half may benefit by such therapy; but what the effect of earlier treatment will be in the prevention of recidivism has not yet been worked out. Prewer,[68] who worked in a naval centre during the war claimed that with firm discipline and group methods he was able to reclaim two-thirds of the worst social types.

The management of problem families and the work of child guidance will help to diminish crime. When adequate personnel can be provided, a linkage between the psychiatric service, the probation officer and prison-authorities cannot help but produce some valuable effects. Much is being done, but there is still a need for reform of prisons and correctional centres. I quote Menninger:[69]

> . . . there should be little distinction between the psychiatric hospital and the reformatory. Both should be institutions for the examination, treatment—and in some instances permanent detention—of individuals with behaviour ineptitudes, distorted personalities, social maladjustment and sick minds.

In other words, the whole mental attitude to the criminal needs to be altered.

Claude Mullins,[69] who recently retired from the London Bench after a lengthy period of service as a magistrate, recognizes how inportant it is for psychiatric advice to be available in the courts. He expressed the following opinion:

> . . . the time was coming when the public would realize that for a good deal of crime a fair trial and a sentence according to law were not enough. Lawyers and lay magistrates were not always the best people to decide on the course to be taken with an offender, and it was by no means only in sexual cases that psychiatry might be needed. At all times there were in prison men, and women too, who could have been made into decent citizens if only, when the case was heard, someone had been present to point out to the judge, the recorder or magistrate what course was likely to be most successful in putting them right. He believed that at some future date crime might be divided into two classes, medical and non-medical. The law was inadequate to deal with some types of crime. Before sentence was passed there should be provision for social investigation by probation officers and for medical investigation by doctors.

Mullins considered that a panel of doctors should be available to advise the court, and that medical opinion should not be partisan—for the prosecution or for the defence. If medical opinion was such before the trial that the prisoner was insane, "it was perfect nonsense to submit evidence of insanity to a jury". He thought the McNaghten Rules should be preserved, since the doctrine of "irresistible impulse" might lead to certain abuses.

Mannheim[70] points out how the law is the last institution to change as society evolves, and criminal law changes more slowly than other branches. He too is in favour of a treatment tribunal and recommends the provision of the "indeterminate sentence" instead of discharging offenders uncured after short sentences. In general, there is an urgent need for medico-legal *rapprochement* to deal with such matters as suicide, euthanasia, sterilization and sex offences.

It is noticed with satisfaction that a new Criminal Justice Bill, shortly to become law, has been passed in England and makes provision for many of the above recommendations.[71] The bill is aimed at making the punishment fit, not the crime, but the criminal. Corporal punishment and penal servitude have both been abolished; instead of the latter the prison governor classifies his patients according to their needs. Furthermore, if the accused is certifiable as insane, the court of summary jurisdiction can make a reception order so that treatment can be made compulsory; the court can require that the offender submit to treatment for a period of up to twelve months, either residential or non-residential. The term "detention centre" is to be preferred to prison and the term "criminal lunatic" is to be abolished. The entire aim is to reform the criminal—to produce in him a sense of social obligation. It is but 100 years since 200 offences were punishable by death; but 50 years since Samuel Butler was considered a heretic for suggesting that society would eventually consign its criminals to hospitals; but 35 years since Norwood East started psychotherapy on offenders; so it may well be seen that there is still much research which will need to be undertaken before the full implications of the reforms which are being made can be appreciated.[72] The quantity and quality of the psychiatric service in the prisons are being steadily increased, and the appointment of a female psychiatrist has recently been made to the Holloway Prison for Women in London. It should be emphasized that although psychotherapy is important, there is an enormous field for social work, both in the immediate adjustment of the offender and in the subsequent follow-up.

I should like to refer briefly to the sexual offender who may have, associated with his aberration, sado-masochistic tendencies. His problem is related to that of the general problem of mental disorder and crime, and should be dealt with on general lines. It is just as wrong to release these persons uncured, perhaps eventually to commit murder, as it is to castrate them all. I would draw your attention to the work of a team of psychiatrists who, under the auspices of the Quakers in New York, claim in their first year's work to have adjusted all but six of over 400 offenders.[73]

The male homosexual constitutes a social problem, yet the female does not; this is a direct consequence of the repressive attitude of the law; anti-social behaviour does not exist in those countries where the liberal provisions of the *Code Napoléon* prevail. Homosexual tendencies exist in many males, but heterosexual adjustment is more likely to occur where there are no underground groups who, by virtue of their feeling of separateness, foster the many myths surrounding this state and accordingly drag in waverers. We must recognize that in our midst we have maybe 4% of males so afflicted, who are often of high cultural development and productive of much artistic effort. The true invert is harmless, and is a useful member of society, but as I have stated elsewhere,[74] "repression of any instinctive drive inevitably leads to anti-social expression and to mental conflicts, with resultant psychiatric disorder; both of these could be minimized by a release of social pressure". The latter is one of the important points with regard to the management of this problem, as is a sound over-all scheme of proper mental and sexual hygiene. If the early management of the child is satisfactory; if proper sex education appropriate to the stage of the development of the child is given; if adequate social intercourse is provided and active direction towards the opposite sex at puberty is encouraged; then I consider the problem will not be significant. Deep psychotherapy needs to be undertaken in certain established cases; superficial psychotherapy will only remove symptoms of internal conflict. The law should be modified to provide for the treatment of homosexuals; mildly homosexual persons who are not a menace but a nuisance should be made to attend clinics; anti-social homosexuals, however, should be given an "indeterminate sentence" and should not be discharged till it can be said they have been reasonably adjusted. I note that recently one State in Australia—Queensland—has instituted a bill to deal with sex offenders on modern lines.

Since the roots of maladjustment go back to early life, a comprehensive scheme for the prevention and treatment of mental ill health in children is needed. A child requires security, affection, a control which is not repressive and encourages natural development, and companionship with other children to provide for normal social development. An advice service should be readily available as part of the child welfare service, whilst more serious problems could be referred on to child guidance clinics; it is most essential, however, that personnel tendering advice should be suitably trained. The Lady Gowrie pre-school clinics provide a necessity, especially for those children whose mothers are working during the day. Schools should give opportunity both for individual development and for

socialization; early signs of maladjustment should be detected and expert advice sought; it is just as important to pick out the trouble-free child who may be abnormally sensitive and a candidate for schizophrenia as it is to deal with the child presenting an overt behaviour problem. Child guidance clinics in adequate numbers must be provided, and I am of the opinion that nothing less than the full team of psychiatrist, psychologist and social worker is satisfactory, though Blacker[75] has suggested that the clinic may be controlled by a psychologist, and those children then considered to have a psychiatric problem would be referred on to a clinic under the ægis of a psychiatrist; this latter procedure is opposed by the National Association for Mental Health since the psychologist cannot possess enough clinical knowledge to exercise a diagnostic function. In England at present 80% of child guidance clinics are sponsored by the education authorities, 15% are in general hospitals and the rest are run by the mental health services. General opinion is in favour of linking the child guidance clinics with the education department, but through the school health medical service, and this on the whole is probably the best plan. However, there is still room for the clinics at the general hospitals, with the pædiatrician adding to the total quality of the service which may be provided; there is also room for guidance at maternity and child welfare clinics, and for the suitable use of foster homes, boarding homes, residential schools and special treatment hostels.

The Curtis "Care of the Children Committee" appointed in England[76] showed that in the community there are a large number of deprived children—orphans, waifs and strays, defectives, delinquents *et cetera*—who are being inadequately cared for, if not actually ill-treated. Public opinion was so shocked by the revelation that a new bill was rushed through Parliament to become law in July of this year. All the 139,000 of "nobody's children" are to be given full educational opportunity, and, as far as possible, home life through a boarding-out system. The child becomes the responsibility of the local council, which must afford him "opportunities for the proper development of his character and abilities". Child welfare committees are to be appointed to see that the child obtains necessities, such as school blazers, and each authority is appointing a full-time children's officer, who is already being trained.[73]

Derelict families are to be found in any community, and they form a problem out of all proportion to their number because of their high rate of breeding and the large amount of anti-social behaviour to which they give rise. An experiment in two large towns in England by family service units, where volunteers attempted the social reeducation of these families, appears to be having some success, and the results are being awaited with considerable interest. Merely to rehouse these families is insufficient; they need a personal guidance service.

Student health requires a psychiatric service in view of the mental stress of study and examinations; a number of breakdowns in training might be prevented by timely intervention. This type of service has been made available in some universities overseas.

Since, as I pointed out earlier, the percentage of aged people in the population is increasing, it is necessary to provide for their general and mental health, the latter being an increasingly important factor with increasing age. In the field of prevention, provision of special units for aged people, of old people's clubs to counteract loneliness, and of special advisory health centres, will be useful. Morbidity could be minimized by utilizing specially trained personnel in geriatric centres established as part of general hospitals; similar sections in mental hospitals should also be provided. The general aim is to encourage activity and interest for as long as possible and to prevent loneliness. B. Seebohm Rountree's Nuffield Foundation Committee of Inquiry into the Problems of Ageing and the Care of Old People showed that the biggest factor in causing morbidity was this question of loneliness, which is especially marked in large towns. They recommended clubs, and also communal centres designed to take 30 to 35 souls. The London County Council has, as an experiment, instituted the "London Federation of Homes for the Aged" aimed at raising the standard of all old people's homes and organizing a consultation service for them; it has surveyed the home help available, and there are already ten local committees which have organized mobile canteens.[74]

Alcoholism is a result of personality defect, not a moral defect or a disease; it is symptomatic of the personality defect, though later on toxicity may produce organic change. The number of alcoholics in urban areas is increasing parallel with other signs of urban disorganization, whilst rural areas in the United States of America have actually shown a slight decrease.[79] "Alcoholics Anonymous", a community effort commenced a few years ago, has produced some very valuable results in the management of confirmed alcoholics; the factors which seem to be necessary are the attainment of a state of complete hopelessness, a subsequent religious type of conversion, identification with the protective group, and supervision for twenty-four hours of the day during the difficult process of readjustment. Recently in a New York hospital a ward was turned over to "Alcoholics Anonymous" for the management of patients needing temporary care, with quite reasonable results. In Connecticut, interestingly enough, an act has been passed whereby 9% of the revenue from the sale of alcohol is to be used to alleviate the evil effects; the money is administered by a commission which is concerned with treatment and research.[80]

The activities of "Alcoholics Anonymous" draw attention to certain fundamental points; firstly, towards the importance of group activities and human interrelationships; secondly, towards the need for the whole community to be actively interested in psychiatric problems; and thirdly, towards the need to influence emotional and ethical as well as purely intellectual processes. Appreciation of the mechanisms of group interrelationships was something which became prominent in the latter part of the second world war. Group techniques are being employed in the therapy of all forms of mental disorder now and are helping with the problem of the shortage of psychiatrists. During the war it was realized that the welfare of the group depended on satisfactory leadership, on conscious motivations of a worthy ethical nature, and on identifications with the *mores* of the group; the same fundamental mechanisms exist for the family, the group and the nation. Since this is so, one may perceive how vital is the education of the public towards a reasonable outlook in relation to mental disorder; it has to become as "morally worthy" as physical disorder, and every possible element of propaganda should be directed towards overcoming ignorance and prejudice.

In the world today, there are large numbers of inner tensions in all groups which express themselves in the mass in an outpouring of aggression; in the international sphere, they give rise to war—a "mass psychosis". We know that social maladjustments are found throughout our western societies in the form of family-disruption, crime, sex disorders and alcoholism, amongst others; social neuroses are fostered by such factors as racial prejudice, industrial conditions and poor housing; whilst overt maladjusted behaviour shows itself in the form of aggression, accidents, strikes, "racketeering" and disharmony in the international sphere. It is essential to undertake research into the fundamental causes and to try to minimize these, if not in the present generation, at least in subsequent ones. To my knowledge there is not one official body in Australia engaged in research into the psychiatric aspects of illness or social maladjustment.

SUMMARY.

In the short time remaining, I will attempt to gather up the threads of my discussion and integrate them into some recognizable pattern.

1. Psychiatrists of sufficiently high standard should be trained in sufficient numbers together with other members of the psychiatric team. Standards should be laid down and courses aranged as soon as possible.

2. Within the present framework of medical service, facilities for psychological testing and social work should

be made available to hospitals and clinics. Psychiatrists in the mental hospitals should be given the opportunity to practise extramural psychiatry so that they may obtain a requisite breadth of outlook. Overseas travelling fellowships should be made available by responsible bodies to act as a stimulus to Australian psychiatry and keep it abreast of world developments.

3. Sufficient psychiatric facilities should be provided in the form of out-patient clinics, child-guidance clinics, intermediate hospitals, rehabilitation centres and in-patient general hospital departments as soon as personnel becomes available. Adequate provision should be made for custodial care or training of all mentally and physically handicapped people in the community, and a job-placement service for these should be instituted. Throughout all psychiatric therapy, there should be an emphasis on the active rehabilitation and resocialization of the patient.

4. The necessary integration between psychiatry and general medicine should be furthered, through revision of the student curriculum; also, short post-graduate courses should be arranged for medical practitioners so as to give them some psychiatric orientation.

5. The education of the public towards an enlightened attitude to mental disorder should be part of the programme of public health. The general public must have access to sound psychiatric advice, be it in home, school or church. Public interest should be encouraged and suitably trained volunteer helpers used, where practicable, in social work and in institutional activities.

6. There should be established a close liaison with all bodies interested in social health—with universities, law, industry, public health, child welfare departments, courts, prisons, schools, colleges, the churches and other branches of medicine. A full diagnostic service should be available for all these, for only in this way can such problems as crime, alcoholism, geriatrics, psychopathy, mental deficiency and derelict families be dealt with.

7. Research into aspects of social psychiatry should be a function of university practice, to elucidate and assess psychiatric problems peculiar to Australia, and to devise means of dealing with them; it should include statistical research.

8. The problem of mental health should be a national responsibility, and finance should be provided throughout the Commonwealth to foster psychiatric education and research in line with what is being done in Great Britain and United States of America. Consultation should be held with legal and governmental authorities to consider ways of bringing the management of criminals in line with modern psychiatric concepts; also, general lunacy laws and procedure should be made uniform for the Commonwealth. Centralization and coordination of psychiatric activities will enable them to be farmed out economically to the numerous agencies requiring psychiatric guidance.

9. Finally, I would make a plea for a lead in these matters to be given by the newly-formed Australasian Association of Psychiatrists. In 1946 members of the American Psychiatric Association developed a "Group for the Advancement of Psychiatry" which formed 15 committees to investigate special problems and they all[39] ". . . agreed to sacrifice in time and money to a considerable extent in order to study such problems as the needs of state hospitals, medical education, contacts with lay groups, preventive psychiatry, psychiatric social work, treatment and other subjects. This idealistic outlook is one which the Australasian Association should follow. The American effort has already borne fruit, for very recently the Psychiatric Foundation was formed[21][22][23] spontaneously, as a lay effort, to provide funds for the financial support of the American Psychiatric Association, and to enlist lay individuals who would voluntarily further the education of the public and who would keep an eye on the standard of the mental services in the States. Our association should see that delegates attend and report on the International Congresses of Mental Health, since the psychology of international relationships is so vital to the future of mankind. The formation of a "National Committee of Mental Health" should be encouraged to help with after-care and follow-up of patients, boarding out, hostel accommodation and so on.

CONCLUSION.

I have in these two essays confined myself to socio-psychiatry; there has been little or no mention of individual therapy which, by itself, helps diminish the psychiatric problem in a community. I would reiterate the fundamental need for research, and feel that I cannot finish better than by quoting Menninger,[39] who has done so much to capitalize the lessons which were learnt during the recent hostilities when large groups of individuals had to be kept at an optimum state of mental health and morale. In an address to the American Psychiatric Association recently, he said:

> I feel strongly that we are not now in a position even to deliver much of the available information that we might assemble. It has been my intention to direct our thoughts to a wider horizon and to urge acceptance of our responsibility for contributing what understanding and therapy we can for the problems of unhappiness and maladjustment that exist in the world today. To do this we must greatly increase our trained personnel. We must extend our frontiers of knowledge. We need to crystallize our goals. Our organization should require that groups of us survey specific problems, collect data about these, apply our knowledge to them, and produce a programme of action. We need to develop more medical statemanship . . . we can no longer evade a decision on the matter.

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HUMAN BOTULISM IN AUSTRALIA.[1]

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WHILE not an uncommon disease of sheep, cattle, horses and domestic and wild water fowl in this country, botulism in man has not been reported previously in Australia.

Two outbreaks occurred in November and December, 1942, at widely separated places, namely, in Northern Queensland and in the Northern Territory. Both were attributed to commercially canned beetroot.

The available evidence is largely circumstantial, because the toxic foodstuff was not recovered in either instance, but the epidemiological, clinical and post-mortem findings, coupled with the subsequent laboratory investigations, appear sufficiently convincing to justify a conclusion that the disease was, in fact, botulism.

The combined mortality rate—eight deaths in 31 cases—was rather below the usual figure, which has not uncommonly risen as high as 100%, especially in view of the fact that in no case was the course of the disease influenced by specific serum therapy.

In assessing the possible future implications of these two outbreaks, it is perhaps as well to realize that here, as in America and elsewhere, where human botulism has not been uncommon in the past, *Clostridium botulinum* is a widely distributed normal saprophytic inhabitant of soil. Therefore, given suitable conditions, such as faulty or otherwise inadequate processing of commercially-canned or home-canned, non-acid foodstuffs, in which heating is either inadequate or of insufficient duration to destroy all spores, or if contamination can occur after processing through undetected faults in cans, then further outbreaks are not impossible.

Inasmuch as the success or failure of therapeutic measures may hinge largely on an early diagnosis, it is felt that a record of these outbreaks should be available to the medical profession.

HUMAN BOTULISM IN OTHER COUNTRIES.

Botulism has not been in the past, and is less likely to be in the future, a common disease of man. Because of the specialized growth requirements of *Clostridium botulinum*, perhaps the most exacting of which is a very low oxygen potential, this non-infectious disease occurs in the form of sporadic outbreaks, involving as a rule small groups of people. The serological types of *Clostridium botulinum* usually affecting man are the strongly proteolytic types A and B, both of which produce gases, odours and proteolytic changes in the foodstuff which would deter most people from eating it. More insidious, how-

[1] Earlier publication of this report was not considered expedient for reasons of security.

ever, is the non-proteolytic or feebly proteolytic type E, which has recently caused isolated outbreaks in America (Hazen, 1937).

Because the toxin is unstable to heat, the chief danger lies in preserved foodstuffs consumed without adequate pre-heating. Although for absolute safety with products of low heat permeability, it is necessary to boil for twenty minutes, protection may be afforded in some cases by a time-temperature relationship of 80° C. for only five minutes.

Recently, in America, a housewife opened a jar of beetroot which did not appear normal. After tasting a small amount, she boiled the remainder and served it to four members of the family. She alone developed botulism and her life was saved by the immediate use of specific antitoxin (Meyer, 1943).

The toxin is also unstable to alcohol. Thus, in the case, amongst others, of the "Loch Maree Tragedy" (Leighton, 1922) the sole survivor of a party of eight consuming potted duck paste sandwiches, which contained toxin, drank whisky with his meal.

Only four outbreaks have been recorded in the British Isles (Topley and Wilson, 1946), the largest of these being the "Loch Maree Tragedy". The others occurred in London. One was traced to a vegetarian nut brawn, another to home-made meat pies and the origin of the third was not detected. In Germany, however, there were 23 outbreaks between 1907 and 1923, from only one of which was the organism isolated.

The disease has attracted a great deal of attention in America, mainly owing to the work of Meyer and his associates (Meyer and Dubovsky, 1922). Between 1899 and 1942, 367 outbreaks were recorded. The foodstuffs involved included 46 varieties of preserved vegetables and fruit (275 outbreaks), 17 varieties of meat products (27 outbreaks), eight varieties of fish and sea foods (25 outbreaks), cheese (five outbreaks), and canned milk (two outbreaks). In 33 outbreaks, the causative food was undetermined and diagnosis was based on the characteristic symptoms.

As the Australian outbreaks were both attributed to canned beetroot, a "non-acid" vegetable, it is of interest to compare the origin of the majority of the 275 outbreaks traced to vegetables and fruit. The following were the principal foodstuffs involved:

String beans ..... 83 outbreaks (three commercial packs)
Corn ..... 36 outbreaks (one commercial pack)
Spinach or chard .. 22 outbreaks (ten commercial packs)
Beetroot ..... 17 outbreaks (two commercial packs)
Asparagus ..... 13 outbreaks (all home preserved)
Olives ..... 13 outbreaks (all commercial packs)

Moreover, all of the 367 recorded outbreaks, with 51 exceptions, were traced to home-preserved foodstuffs. Because of the greatly reduced heat resistance of *Clostridium botulinum* spores in an acid medium, there is little danger from foodstuffs with a pH below 4·5.

Animal Botulism in Australia.

Seddon (1922) described an epizootic disease of cattle in Tasmania caused by *Clostridium botulinum*, type Cβ. It occurred mainly on country of which the soil is deficient in calcium and phosphorus, this inducing the animals to chew bones in an effort to remedy these deficiencies. The organism, which may be found in the intestines of sick and healthy animals and in the soil of the affected areas, produces its toxin in decomposing carcases under the anaerobic conditions provided by the concomitant growth of aerobic and anaerobic putrefactive bacteria. The toxin persists, especially in the bone marrow, and causes botulism on ingestion by healthy animals.

In Western Australia, Bennetts and Hall (1938) reported enzootic botulism in sheep and cattle, also due to type Cβ, associated there with soil deficiencies and decomposing rabbit carcases. The extent of the disease in those areas was such that vaccination with alum-precipitated toxoid is now a routine successful prophylactic measure.

In New South Wales, botulism of horses and cattle consuming mouldy hay or silage is relatively common. In most instances toxinogenic strains of type B can be isolated from the fodder (Seddon and Carne, 1926; Edgar, 1929; Rose and Edgar, 1930). In Queensland, the disease has not been recorded, but in Victoria numerous cases in horses and cattle are seen. In this State too, several widely scattered outbreaks have been described in ducks and wild fowl. Pullar (1933) recorded limberneck in domestic ducks, attributed to type Cβ, following access to a putrefying stewed pig's head. In 1934 the same author reported many deaths in a variety of wild water fowl feeding in swamps and lagoons, heaped round the margins of which were masses of decomposing vegetation containing type Cβ and its toxin. The birds that died included black duck, teal, wood duck, cormorants, spur-winged plover, water hens and native companions.

The Incidence of Clostridium Botulinum in Australian Soils.

Apart from the foregoing studies, which indicate that *Clostridium botulinum* types B and Cβ are widespread in the soils of this country, little work has been carried out until recently to determine whether this microorganism is as ubiquitous in Australian soils as Meyer has found it to be in America. There type A predominates in virgin forest soils, while type B, a possible environmentally induced variant of type A, occurs as a rule in intensively cultivated areas where vegetables and fruits were frequently found to be contaminated. Dubovsky and Meyer's survey (1922) led them to conclude that, from a practical aspect, *Clostridium botulinum* spores are ubiquitous in the United States and that there is no reason to suppose that spores cannot be found anywhere at any time. In any given area they believe that a soil incidence of more than 20% to 30% of samples examined is liable to lead to frequent botulism in man and animals.

The first extensive examination of soils in Australia was that of Eales and Gillespie (1947), who prepared cultures from 183 representative Victorian soils, searching specifically for the hitherto undiscovered type A strains. In this survey four toxinogenic type A strains were isolated, all from virgin soil in mountain areas at an altitude of approximately 3000 feet. By American standards this is a low incidence.

There is on record also (Bull, 1943) the isolation from a soil in South Australia of a proteolytic strain subsequently identified by Miss Eales as type D. It is obvious that further surveys, especially of vegetable-producing areas, would be of considerable benefit in assessing the danger from botulism.

Investigation of the Australian Outbreaks.

The circumstances surrounding the Australian outbreaks, especially that at Portland Roads, North Queensland, were such that field and laboratory investigations were undertaken by a number of persons representing the different interests involved. In drawing up a complete picture, it is desired to acknowledge at this stage that the evidence has been drawn freely from a number of reports, as well as from the personal investigations of the author carried out in association with Major Charles Whitford and Dr. M. I. Joslyn.

The Portland Roads Outbreak.

On November 10, 1942, at Portland Roads, twenty-six persons of a group of thirty-seven consuming meals prepared in the same kitchen developed symptoms. Sixteen were sufficiently ill to require admission to hospital and seven died within ten days. Ten others, on subsequent questioning, admitted to transient illness. A diagnosis of bulbar paralysis was made, due either to the consumption of water contaminated with leaded petrol or to botulism. Although preliminary investigations of the food situation were made (W. J. Mendenhall) twenty-four hours after the suspect meal, the lead-poisoning theory, though ultimately disproved, was favoured for a sufficient length of time almost to rule out the possibility of recovering *Clostridium botulinum* or its toxin from the foodstuff or from the patients themselves.

Clinical Records.

The following composite case report is derived from the clinical histories of the individual patients admitted to

hospital, supplemented by further information gathered from the patients and their medical attendants.

The first onset of symptoms occurred within twelve to sixteen hours of eating the food in six cases, in four of which the condition proved fatal. The other three patients who later died all felt ill within forty-eight hours. Further cases continued to develop up to the fourth day, the onset in those patients who were not admitted to hospital varying from three to four days.

With the exception of severe headache (five cases) and abdominal or leg cramps with variable diarrhœa and vomiting (five cases), pain was not a feature of any stage of the disease. In fact, several of the convalescents who had almost died stated that, apart from general weakness and occasional acute respiratory embarrassment, they were quite unaware of the gravity of their condition. The onset of symptoms (in all cases apart from the above ten, in which they were preceded by headache *et cetera*) was marked by a variable degree of nausea, malaise, double vision with lateral displacement and inability to focus objects more than about six feet away with consequent blurring of vision. A feeling of tightness in the throat was soon followed by difficulty in swallowing.

Clinical Findings on Admission to Hospital.—Some of the patients were quite alert on admission to hospital, while others, especially those admitted within forty-eight hours of the meal (including all those who died) were acutely ill and in considerable distress due to dyspnœa and dysphagia. The rectal temperature was either normal or subnormal. The pupils were dilated, regular and equal, reacting strongly to light, and there were no abnormalities in the fundi. There was, however, diminished power of convergence, with varying degrees of paralysis of the eye muscles, double vision, especially in certain rotary movements, and bilateral ptosis. The senses of hearing and smell were undisturbed and there was no loss of sensation over the skin of the face and forehead. Although the facial muscles had good tone, the palpebral fissures were diminished. Speech was slow and there was difficulty with all pronunciations. Laughing and whistling were possible, but in repose the face showed little expression. Motor and sensory power in other parts of the body showed no abnormality and no pathological reflexes were elicited. The voice had a peculiar thick nasal twang and movements of the tongue were greatly diminished, while paralysis of the palatine muscles was marked or even complete. The gag reflex was diminished and attempts to swallow water led, in many cases, to nasal regurgitation. The heart action was regular and rhythmical, but respiratory excursions were shallow and the accessory muscles were brought into use for deep inspiratory efforts. Respiratory embarrassment of varying degree was a universal symptom. Symptomatic treatment only was adopted in all cases.

Fatal Course.—In each of the seven fatal illnesses, death was attributed to respiratory paralysis, often preceded by aspiration pneumonia, the heart action continuing for as long as twenty minutes after the cessation of voluntary respiration. The duration of illness appeared to bear little relation to the length of the incubation period. Of the six patients with an incubation period of sixteen hours or less, four died: one on the fourth day, two on the eighth day and one on the eleventh day after the fatal meal; and of the other three, in whom symptoms appeared between the forty-fourth and forty-eighth hours, two died on the fifth day and one on the sixth.

Non-Fatal Course.—The convalescent period of the nine patients treated in hospital who recovered was of variable duration. Improvement generally began before the end of the first week and progressed so that all except one had been discharged by the end of the seventh week. The last patient was seen during the ninth week. He stated that serious disturbance of vision had continued for some time. He could not see or focus clearly for four weeks and the bilateral ptosis had not disappeared completely until the sixth week. When seen, he felt well except for a general weakness, particularly of the jaws and knees, and accelerated respiration occurred on slight exertion. He was quite incapable at the time of climbing stairs. His eyes were almost normal, though easily fatigued, and his voice was slightly hoarse. There was no detectable dysarthria remaining.

Ten persons, not admitted to hospital, complained of transient illness of from two to four days' duration. Three suffered moderate to severe headache and eye ache between the fourth and sixth days; one complained only of knee weakness and transient abdominal pain; two suffered from malaise, lassitude and slight dysphagia of twenty-four hours' duration on the fourth day; one had headache and dysphagia on the fifth day; the rest were rather more seriously affected, experiencing nausea, dysphagia, dizziness, cramps, diplopia and exhaustion, with variable respiratory embarrassment between the third and sixth days. All were apparently normal by the tenth day.

Post-Mortem Findings (J. H. Park).

Very little pathological evidence was seen to indicate the cause of death which had apparently resulted from respiratory failure. There was a moderate degree of cyanosis and the lungs contained petechiæ and marked hæmorrhagic congestion. The coronary vessels and the adventitia, but not the intima of the aorta, contained petechiæ. Apart from moderate hyperæmia of the cortical vessels and those on the ventral surface of the pons and medulla, there was no gross abnormality of the brain. The liver and kidneys were engorged, as was the gastric mucosa. In cerebro-spinal fluid, blood and urine collected before and after death and from convalescents no pathological changes in cellular or chemical components were found and the specimens were bacteriologically sterile.

The Adelaide River Outbreak.

At Adelaide River on December 2, 1942 (J. H. Halliday) five or six men of a party of eleven partook of canned beetroot. The first case occurred fifteen hours later, ushered in by severe abdominal pain and the passage of frequent fluid stools with severe cramping pains in both legs below the knees. The ensuing course was identical with that of the cases with a fatal outcome described above and death occurred on the third day. Post-mortem examination revealed no abnormalities other than engorgement of the liver and kidneys and superficial congestion of the cortex of the brain and of the gastric mucosa.

The onset of the second case occurred in approximately twenty-four hours with malaise, visual disturbance and dysphagia. The patient was admitted to hospital forty-eight hours later with well developed symptoms. From the seventh day onwards improvement was noticed and he eventually recovered, although no record of the duration of convalescence is at hand. In the remaining three cases the illness was mild and normally would probably have escaped notice; all the patients were apparently well by the fourth day.

In this outbreak an immediate diagnosis of botulism was made.

Discussion.

Topley and Wilson (1946) state that the symptoms of botulism in man are generally so characteristic as to render the disease capable of being diagnosed on clinical grounds. The incubation period is generally under twenty-four hours, but may be prolonged to seventy-two hours. Prominent among the symptoms are vomiting, constipation, ocular paresis, thirst, pharyngeal paralysis, the secretion of thick, viscid saliva and sometimes aphonia. Generally consciousness and sensibility remain intact until near the end, which is preceded by coma and delirium. The temperature is generally subnormal (96° to 98° F.) but may rise with terminal bronchopneumonia. Death may occur within twenty-four hours of onset of the illness or may be delayed a week. In patients that survive, complete recovery, particularly of the ocular movements may not take place for six to eight months. At autopsy the kidneys, liver and meninges are congested. Histological examination of the organs may reveal thrombosis.

Leighton (1923) points out that the toxin affects the cranial nerves, showing a marked selectivity for the third, fourth, sixth, ninth, tenth and eleventh nerves; that is, the nerves involved are those suppyling muscles, while

those of special sense and general sensation are unimpaired.

In view of the above, there appears to be no resonable doubt that these two outbreaks were due to botulism.

Evidence Incriminating Beetroot as the Toxic Foodstuff.

As the Adelaide River outbreak is the more conclusive in the incrimination of beetroot, it will be mentioned first. The noon meal of December 2, 1942, consisted of tins of camp pie and of cheese and one tin of beetroot (Halliday). The tins were opened and the contents transferred to bread to make sandwiches. Six of the party of eleven included slices of beetroot in their sandwiches, but only one of them actually swallowed any. The others realized that something was wrong and spat the first mouthful out. The beetroot was then noticed to be brownish in colour and puffy with an offensive odour and taste. Moreover, the tin was undoubtedly "blown". It is not known whether the sixth member of those mentioned, who did not become ill, actually placed the beetroot in his mouth.

The circumstances at Portland Roads were less clearly defined. The meal involved was that of noon on November 10, 1942 (F. H. Smith). It was the only meal consumed in common with the other affected persons by one man who died. The common items of diet were canned corned beef and canned beetroot. The available evidence suggests that the beetroot, which was removed from the tin and mixed without pre-heating with other ingredients to make a salad, was tainted. One patient stated that he had purposely put the beetroot to one side of his plate as it appeared and smelt abnormal. He ate the rest of the salad.

On the day following the meal, although no remnants of the meal were found, a variety of canned foods, including a can of beetroot showing "hard swell", were collected from the kitchen and forwarded for laboratory examination (W. J. Mendenhall). The beets failed to yield *Clostridium botulinum* or its toxin on cultural examination or guinea-pig inoculation and oral administration.

All the other foodstuffs tested were sterile and fit for consumption. Unfortunately, more than a month had elapsed after the outbreak at Portland Roads before intensive investigation commenced, so that subsequent inquiries were carried out under considerable difficulties. The main object of the investigation was to establish, if possible, the nature and origin of the toxic foodstuff in order to guard against further outbreaks. The first step taken was to advise that no canned vegetables should be consumed without pre-heating to 100° C. for twenty minutes; and, as soon as it seemed reasonably certain that beetroot was responsible, all existing stocks of that product were withheld from consumption pending the result of further investigations. The whole of these very extensive stocks was eventually destroyed.

At the same time, a survey of the factories concerned led to a decision to enforce the approved specifications of the American National Canners' Association as the minimum requirements in the future processing of all non-acid vegetables. Moreover, in addition to laboratory tests already being conducted at this stage, the Division of Food Preservation of the Council for Scientific and Industrial Research undertook the task of examining representative samples of existing frozen stocks of beetroot.

Subsequent Investigations.

Owing to the above-mentioned delay, early opportunities were lost for conclusively incriminating beetroot and of isolating and typing the strain of *Clostrodium botulinum* involved. Such proof would, of course, have been provided by finding *Clostridium botulinum* or its toxin in the foodstuff itself, or in the vomitus, fæces, intestines or liver of the patients. Two possibilities, therefore, remained, namely, to obtain a can of contaminated beetroot and/or to demonstrate specific antitoxin in the sera of the convalescents.

The responsibility for this work was distributed amongst a number of different laboratories in order to reach a decision at the earliest possible date. Because the results failed to elucidate the problem completely, certain relevant aspects only will be dealt with here.

Collection of Materials for Examination.

(*a*) Representative foodstuffs collected from the kitchen on the day following the fatal meal at Portland Roads were examined by Dr. W. S. Monlux, who failed to find *Clostridium botulinum*. (See above).

(*b*) In the secondary stage of the investigation, representative samples of possibly dangerous foodstuffs were collected: (i) from the central depot from which the food supplies of the affected persons had been drawn (these including all cans showing defects—"springers", "flippers", "hard swells" and blown or otherwise defective cans, especially of beetroot—as well as apparently normal cans); (ii) from the garbage pit in which the refuse from the meals of the affected group had been buried; (iii) from frozen stocks of beetroot held in different areas, including the factories of origin. Soil samples were examined for the presence of *Clostridium botulinum* from the garbage pit and from the central food depot area. Serum samples were collected from all convalescent patients.

Examination of Foodstuffs.

The average pH of normal cans of beetroot was 5·07 as measured by potentiometer readings. This degree of acidity is considered to be inimical to the survival of spores during processing at 240° F. for thirty minutes. The contents of normal cans collected from the central depot, after having been found sterile and innocuous to test animals, were tested as media for the growth of *Clostridium botulinum* types A and B, the types most likely to have been responsible for the two outbreaks. Under anærobic conditions, inocula of cultures of types A and B, sufficient to give abundant growth and toxin production in liver piece broth, failed to grow or to produce toxin in the beetroot liquor containing cylinders of beetroot.

When, however, a heavy inoculation of the beetroot medium was made with type B culture, growth did occur. The beetroot became brownish in colour with an offensive odour, and toxin was produced in sufficient quantities for an oral dose of one millilitre to kill a 300 gramme guinea-pig in three days, with characteristic vomiting and flaccid paralysis.

This experiment provided the circumstantial evidence that type B *Clostridium botulinum* is capable of growing and producing toxin in beetroot at a pH of 5·07. The cans from which the beetroot was taken were those of two manufacturing companies. In both instances, the cans were internally lacquered so that tin probably was not dissolved into the liquor. As shown by Scott and Stewart (1944, 1945) dissolved tin retards or inhibits the growth of *Clostridium botulinum* types A and B in certain vegetables including beetroot. Unlacquered cans might, therefore, be regarded as safer than those internally lacquered. Of all the canned beetroot examined from various sources, only one can yielded *Clostridium botulinum* (C. R. Fellers and M. J. Powers). This can was excavated from the garbage pit at Portland Roads. Before being discarded it had been punctured with a small, jagged hole at one end, about 2 millimetres in diameter, and was apparently a blown can. This hole had become plugged with soil and the can contents, and was evident only when the can had been cleaned. The seal thus formed had been sufficiently secure to retain approximately half the original liqour. The contents had a "cheesy" odour and were blackened, and there was a good deal of rusting through the internal lacquer of the can above the fluid level. The contents included *Clostridium botulinum* which was isolated in purity and subsequently classified by Stewart and Scott as type B, and the liqour produced characteristic symptoms of botulism in guinea-pigs on oral administration. Whether, in view of the fact that this can had been opened and then buried for some time, this finding is admissible as

evidence of the origin of the outbreak is open to discussion. Evidence in favour of the ætiological role of type B is as follows: (*a*) The fact that the can was punctured and then discarded may indicate that it was unwholesome. (*b*) The proteolysis of the product which had occurred in the beetroot consumed by the patients points to the role of the proteolytic types A or B rather than to other types of *Clostridium botulinum*. (*c*) The soil samples collected from the garbage dump and environs failed to yield toxinogenic cultures of *Clostridium botulinum* (see below). (*d*) *Clostridium botulinum* type B (Meyer and Dubosky, 1922) is rarely found in virgin forest soil such as that in which the dump was located, but is not uncommon in intensively cultivated areas, in this country like those in which beetroot is grown.

The recovery of a contaminated tin under these circumstances should therefore be regarded as highly suspicious. That the Adelaide River outbreak was traced to the product of a factory other than that producing the above can may indicate that both factories were at the time producing occasional badly processed or badly sealed cans. It must be remembered that the can at Adelaide River and that from Portland Roads garbage pit were both blown. Moreover, the evidence suggests that the contents of the can responsible for the Portland Roads outbreak were also spoiled. This, together with the probability that *Clostridium botulinum* spores in a medium of pH 5·07 would be unlikely to survive processing and the restricted nature of the outbreaks in comparison to the consumption of beetroot appears to point to the likelihood that a small number of faulty cans only were contaminated, possibly after being processed. This might have occurred in the cooling water. An alternative, of course, is that a particular batch of cans, as sometimes happens, was not placed in the retorts and was, therefore, not processed at all. Whatever the origin of the contamination, there can be no doubt that the proportion of spoiled cans was not unduly high.

Examination of Soil Samples.

Six surface soil and six subsoil samples from the garbage pit and from the central food depot area were examined by the usual cultural methods. Four cultures from each soil sample were made by adding four grammes of soil directly to large bottles of Robertson's cooked meat medium. Two of these bottles were heated slowly to 80° C. and held at that temperature for thirty minutes. Then heated and unheated cultures were incubated at 37° C. and 30° C. for three months. Guinea-pigs were dosed orally with 3 to 4 millilitre quantities of fluid from each culture at intervals throughout the period. No botulinum toxin was produced in any of the cultures.

Serological Tests.

In patients who recover from botulism, antitoxin, corresponding to the serological type of organism involved, may sometimes be demonstrated in the serum. Thus Stricker and Geiger (1924) demonstrated antitoxin in the serum of two patients on the fourteenth day of illness in sufficient concentration for 0·25 millilitre of serum to protect mice against 15,000 minimal lethal doses of type A toxin, but not against type B toxin (Topley and Wilson, 1946).

Unfortunately, in this instance the nine convalescents who had had hospital treatment had been widely dispersed to different hospitals and, by the time sera were available, two months had elapsed from the time of onset.

Toxins were prepared from classical strains of *Clostridium botulinum* types A, B, Cβ, D and E and an average lethal subcutaneous dose determined for each in guinea-pigs of approximately 300 grammes' weight. Groups of guinea-pigs were then inoculated with approximately 10 average lethal doses of toxin, mixed with 0·5 millilitre of convalescent serum and incubated at 37° C. for thirty minutes before inoculation. Controls included normal human serum *plus* ten average lethal doses of each of the toxins and known antitoxic sera against each toxin type used in the test.

Results.—The animals receiving the known protective antisera survived, while those receiving normal human serum or convalescent serum all died within eighteen hours, indicating that the convalescent sera contained insufficient antitoxin to neutralize only ten average lethal doses of any of the classical botulinum toxins. Therefore, if the patients formed any antitoxin after the attack, the titre had fallen below a protective level within two months.

As a control test, attempts were made to evolve an agglutination test by adsorbing toxin on to collodion particles or *Chromobacterium prodigiosum* (Cannon and Marshall, 1940, Weil, 1942). The technique, however, was not successfully adapted to a toxin-antitoxin union test and the matter was taken no further.

SUMMARY AND CONCLUSIONS.

In November and December, 1942, two widely separated outbreaks of botulism occurred in man, the first to be recorded in Australia. Although specific bacteriological and serological proof is lacking, a very conclusive chain of circumstantial evidence points to canned beetroot as the responsible foodstuff. There appears to be no doubt that in each instance the cans concerned were abnormal, in that they were blown and the beetroot was of peculiar colour, odour and taste. The deterioration of the product in the can points strongly to *Clostridium botulinum* type A or type B. The only other type recorded in man, namely, type E, is non-proteolytic and would produce little or no detectable change in the foodstuff. The finding of a punctured can of beetroot, buried in a garbage pit at the site of one of the outbreaks from which *Clostridium botulinum* type B was isolated, coupled with the apparent absence of toxinogenic strains in the soil of the vicinity, points strongly, though not conclusively, to the ætiological role of this type which, moreover, is present in the soils of cultivated areas in this country.

The freedom from further outbreaks due to canned beetroot may be traceable in part, or entirely, to the following factors.

1. It is thought that only a small number of faulty cans were contaminated, probably after being processed, or that they escaped being processed altogether. If the processing had been at fault, it would be reasonable to expect a much higher incidence of spoiled cans, for conditions were such in the areas involved that the average internal can temperature of a number of batches of stacked foodstuffs tested was 84° F. At this temperature, had the number of contaminated cans been high, there should have been a much greater proportion of blown cans than was actually found.

2. Toxic cans, other than these two, were probably discarded because they were blown, or the contents were offensive. This was probably the case with the contaminated can removed from the garbage pit.

3. After an earlier instruction to preheat all non-acid canned vegetables for twenty minutes at 100° C. before consumption all existing stocks of beetroot were frozen. All of these stocks were later destroyed. However, the number of cans of beetroot from the affected batch or batches consumed before these moves became effective must have been very large.

The lack of previous experience of human botulism from any source in Australia is not easy to explain, but the following factors have undoubtedly played a part, and will continue to do so.

1. Prior to the second world war, commercial canning was more restricted to the safer acid fruits and vegetables, but the rapid expansion of the canning industry to meet the food requirements of the Allied forces necessitated an enormous increase in the volume as well as in the variety of foodstuffs processed, an undue burden being thus placed on existing facilities.

2. Home canning of non-acid foodstuffs has never been as popular here as in America.

3. Few people fail to realize the danger inherent in a can of food which has lost its vacuum, or of which the contents appear in any way abnormal.

4. There are very few potentially dangerous foodstuffs, beetroot being a notable exception, which are not pre-

heated before being served, and canned beetroot was a rarity, if available at all, before the war.

Therefore, although conditions in this country are such that *Clostridium botulinum* has ample opportunity to contaminate foodstuffs, the chances that the disease will assume serious proportions are very remote, especially in view of the tightening up of regulations governing canning that has now taken place.

ACKNOWLEDGMENTS.

As mentioned in the text, the investigations into the circumstances surrounding these outbreaks were conducted by a number of persons; their reports and personal communications have been drawn on freely by the author, who, at the instigation of the Commonwealth Government, was among those engaged on the field and laboratory investigations. Where possible, specific acknowledgments are made in the text, but to any who may have been inadvertently overlooked, I should like to apologize. I am indebted to Professor K. F. Meyer for his courtesy in supplying type strains of *Clostridium botulinum* of American origin.

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Reviews.

THE ELECTRON MICROSCOPE.

THE invention of the microscope three hundred years ago provided a key which unlocked the doors guarding many secrets of biology. Today every medical practitioner understands the principle of the microscope, and the majority use one in their daily routine. The development of the electron microscope some seventeen years ago has already enabled our knowledge of minute objects to be extended far beyond the limit of the optical microscope. Although few will have the opportunity of using (or even seeing) an electron microscope, many will wish to understand something of the principles of operation, the possibilities, and the limitations, of the instrument. It is for these that Dr. Cosslett has written his "Electron Microscope".[1]

The author traces first the development of the optical microscope, and describes clearly how increased resolving power was obtained by the use of oil immersion, dark-ground illumination, and ultra-violet light. The reasons for the limitation of the magnifying power to about 3000 are clearly explained. A survey of the way in which electrons can behave as waves of very short wave-length, and can be focused either by an electrostatic or a magnetic lens, leads on naturally to the description of commercially available electron microscopes which already have given magnifications of more than 50,000.

One of the most difficult problems is the mounting of the material to be investigated in layers sufficiently thin to permit the passage of the beam of electrons. Sufficient explanation is given of the methods used to enable the reader to appreciate the possibilities as well as the limitations of electron microscopy.

Forty pages are given to a discussion of the present uses of the electron microscope, and to possible future developments. Since particles down to 20A (1A = 10^{-8} centimetre) can be shown as single units, it is possible to detect large molecules such as occur in organic and biological materials, as well as many forms of bacteria (and even their structural detail).

Dr. Cosslett is an accredited authority on electron lenses, and has the ability to present his subject matter in a form well within the capacity of the non-specialist reader. The book, which forms one of the Sigma "Introduction to Science" Series, is well printed and illustrated with diagrams as well as with plates of actual photographs taken with the electron microscope.

PATHOLOGICAL HISTOLOGY.

"PATHOLOGICAL HISTOLOGY", by Robertson F. Ogilvie, was first published in 1940; a second edition appeared in 1943 and this was reprinted in 1945. The fact that a third edition was called for in 1947 is an indication that this book is much appreciated.[2] This appreciation is justified, because it is an excellent book. Nevertheless it should be recognized, especially at the present time when textbooks of pathology are difficult to obtain, that this is not, and does not claim to be, a textbook of pathology. There is no doubt that this book will be useful to many who wish to gain knowledge of pathological histology, and who realize that this knowledge will open up fields of pathological interest that cannot be appreciated from a study of gross pathology alone. It should still be kept in mind, however, that the best way to study pathological histology is from the actual microscopic sections, and Ogilvie's book should be regarded as complementary to such a study of original histological preparations.

In this latest edition the text has been extensively rewritten and amplified; some illustrations have been replaced and new ones have been added. In the first edition there were 220 photomicrographs in colour; in the latest edition there are 260, and the great majority of them are excellent. As in earlier editions, the book is very attractive, and is a credit to all concerned in its production.

[1] "The Electron Microscope", by V. E. Cosslett, Ph.D., M.Sc., M.A., F.Inst.P.; 1947. London: Sigma Books, Limited. Sydney: Walter Standish and Sons. 7½" x 5", pp. 136, with many illustrations. Price: 7s. 6d.

[2] "Pathological Histology", by Robertson F. Ogilvie, M.D., F.R.C.P. (Edinburgh), F.R.S.E., with a foreword by A. Murray Drennan, M.D., F.R.C.P. (Edinburgh), F.R.S.E.; Third Edition; 1947. Edinburgh: E. and S. Livingstone, Limited. 8½" x 5½", pp. 470, with many coloured illustrations. Price: 37s. 6d.

The Medical Journal of Australia

SATURDAY, JULY 10, 1948.

All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given without abbreviation: initials of author, surname of author, full title of article, name of journal, volume, full date (month, day and year), number of the first page of the article. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors who are not accustomed to preparing drawings or photographic prints for reproduction are invited to seek the advice of the Editor.

THE AUSTRALIAN NATIONAL UNIVERSITY.

For some considerable time the people of the Commonwealth of Australia have been given to understand that a National University will be established at Canberra. Authoritative information on the subject has been hard to obtain. We have been told that the Commonwealth Government was obtaining the advice and help of such distinguished scholars as Sir Howard Florey and Professor Marcus Oliphant, and indeed some persons have gone so far as to suggest that the offer of professorial chairs to these two men and to others of wide repute in the world of science and letters would probably be accepted. The appointment of Professor Douglas Copland to the office of Vice-Chancellor in the National University has at least shown that the Government intends to do something and not to allow the university to remain as a fanciful conception. Professor Copland, more than any other person, should be in a position to give information on the subject, and for this reason we would draw attention to an address given by him at the "Commencement Conferring of Degrees" in the University of Melbourne on April 17, 1948. The address is printed in *University Gazette* of May 20, 1948; this is published by the Registrar for the Council of the University of Melbourne, "as occasion requires", and therefore statements contained in it are authoritative.

When Professor Copland spoke he had been back in Australia from abroad for only a fortnight, and he said that since his return he had been plunged into the discussions on the basic plans for the new National University at Canberra. While he confessed that he was a little bewildered at the importance of the problems that confronted him, he made the reassuring statement that many people had already done some first-class basic thinking on the Australian National University. Among these people he named two connected with the University of Melbourne—Sir David Rivett, the Vice-Chancellor, and Professor R. D. Wright. With this introduction Professor Copland went on to describe the plans that were under discussion. He was careful to explain that these plans were necessarily tentative and would depend upon a great many unknowns which were inevitable in the economic and social world of today. Professor Copland finds the situation today very different from what it was twenty years ago. Then, he was one of a group from the University of Melbourne who pressed vigorously for greater financial assistance for the university. It did not occur to this group that problems would be in any way difficult if they could only get the money. Today the Commonwealth Government has provided sufficient funds by statute to support the university "on a sound basis". On the other hand (and this is what Professor Copland calls the irony of fate) the men and materials to carry out the intentions of Parliament are "woefully inadequate". This is only one of the problems which Professor Copland finds facing him, and, as he no doubt will be the first to admit, it is poor consolation to be reminded that it is a problem that many others have to face. "To some extent it can be surmounted by establishing satisfactory priorities for the new projects . . ." But let us look at some of the plans.

The new projects include a college to be known as "University House", around which Professor Copland hopes that the community spirit of a university will grow and flourish. "It will be a college in the true sense for both graduate students and staff and, at the same time, will provide adequate club and entertainment facilities." Next to this will be a library. It is a long-term project to build a library and to accumulate "books to provide the material on which research can be effectively done". A librarian has been appointed and it is intended that he shall begin at once the work of buying books. Long before a library is built it will be necessary to arrange for temporary storage of books. At Canberra difficulties of accommodation are so great that temporary storage will be undertaken at Melbourne. In this way when the first unit of a library at Canberra is completed and ready for occupation there will be available the nucleus of a collection of books and journals on the main fields of study with which the university is to concern itself. It looks as if housing difficulties will cause greatest concern to the creators of this new university. Not only have university buildings to be erected, but houses have to be provided for members of the staff. In few places in Australia is the housing problem more acute than at Canberra. However, Professor Copland states that provision will have to be made for staff in part by building houses and in part by building blocks of flats. In addition specialized laboratories for research in medicine and physics will have to be built. In regard to physics Professor Copland states that the matter is urgent because it is hoped that "under the guidance of Professor Marcus Oliphant" it will be possible to develop "one of the leading centres in the world of research in nuclear physics". Professor Copland thinks that it may be possible for research work in medicine to be commenced "under Professor Florey's guidance" before the medical laboratory is completed. The two remaining fields of endeavour mentioned by Professor Copland are social studies and Pacific studies; in these it is intended to press forward with plans as fast as possible and to try to circumvent delays in the building programme. It will be noted that the words "under the guidance" of Professor Oliphant and Sir Howard Florey have been used. What this means is not clear. We should like to read into the words a declaration that these two leaders in research were coming to Australia to take charge of work at

Canberra, to bring their alert minds to the solution of world problems while they are living among us and to stimulate Australian workers. We fear that this is not so.

Professor Copland gave but little more detail of the proposed activities at the Australian National University, but he had something to say about its place in the community. He pointed out that no other university has been developed on quite the same lines as those planned for the National University. He said that it was essential that a university community should be established and that this community should not only have a vigorous internal life, but that it should be integrated with the life of the wider Australian community in which it was to be established. He referred to universities as providing education which would improve the efficiency of a nation and enrich its cultural life. It is to be hoped that this is realized by the Parliament of the nation by whose will this national venture is being undertaken. There is no reason why its members should not do so. That they have gone as far as they have in this matter is greatly to their credit. They must realize that, in the words of Professor Copland, "we are not building for today or tomorrow but for half a century and beyond". It is of the greatest importance that once the scientists and others who are to work with Professor Copland in their respective spheres have been appointed, they should be allowed to do their work unhampered by interference or captious criticism. When this happens it will be known that results of research cannot be expected like a crop of plums from a plum tree in regular season. The university will be a centre for the dissemination of learning and it will also help the community to acquire a lasting sense of values without which any community will degenerate. Professor Copland stated at the end of his address that he knew he would receive the support of academic men all over Australia; he hoped to have the forbearance of all who are interested in developing academic life in this country. All university men and women can help him in this.

Current Comment.

THE ACTION OF "SODIUM AMYTAL".

"AMYTAL" AND "SODIUM AMYTAL" have been extensively used for the premedication of patients undergoing general anæsthesia, and also as a general sedative, particularly to control states of excitement and agitation. The sodium salt, being suitable for intravenous administration, has proved valuable in psychiatric work, and is known to induce a state in which sedative therapy can be reinforced by suggestion. The exact mechanism of its action has been investigated to a considerable extent, but is not definitely established. Stewart Wolf and Herbert Ripley now publish a study of seven hundred patients selected at random from the wards and out-patient clinics of civil and military hospitals.[1] Following the intravenous administration of "Sodium Amytal" in dosage of from 0·1 to 0·5 gramme in 10% solution, injected at a rate of 1·0 millilitre a minute, observations were carried out on these patients on both physical and mental function. Pain perception has previously been found to be altered, but with the use of a device for the measurement of pain threshold, no significant change could be demonstrated. Administration of acetylsalicylic acid by mouth produced a much more substantial raising of the pain threshold. The authors think that salutary effects of the intravenous administration of barbiturate in painful conditions are more likely to be due to changes in the patient's reactions than to blocking of pain perception. The most obvious effect on the patients under observation concerned their emotional states. The changes resembled those following ingestion of alcohol. While relaxation usually occurred, distress was more easily caused when disturbing topics were raised, and a heightened degree of distractability made it easily possible to vary the patient's emotional state. This emotional lability would, of course, be expected from the accepted pharmacological properties of the drug. More interesting are the authors' observations on the altering of both signs and symptoms in the patients under the influence of the drug by manipulation of the situation. Thus headaches due to mental tension were readily relieved by the injection, but could be reproduced with ease by the introduction of the appropriate topic in conversation. Hypertension too could be made to fluctuate by similar means, and these variations were induced with much greater ease than was possible in unnarcotized persons. Vasomotor rhinitis could similarly be relieved by "Sodium Amytal", but hyperæmia and hypersecretion could easily be started again by appropriate references to disturbing factors in the patient's life. Coincident bronchial constriction was also observed in asthmatic subjects. Finally, epileptic seizures inhibited by barbiturates were induced in some subjects during abreaction to discussion of significant and uncomfortable topics.

Of course these experiments are, after all, only a specialized observation in a field that has already been well explored, even up to the demonstration of changes in the gastric mucosa seen through a gastroscope. Their interest lies really in the fact that they contribute to our knowledge of a particular drug and its effects on man. There is no need to labour the point of the differences in the details of the action of the various barbiturates, both in their speed of action and in their persistence of effect; what is not quite so well known is their differences in their affection of the nervous system. Recent experiences with the various sulphonamides have emphasized what a difference can be produced by varying molecular linkages, and it is inevitable that expansion of the power to produce new drugs must also expand vastly the need for fuller pharmacological knowledge. The large-scale field observations possible during the war might well be made in civil medicine, as prescribing, to gain its real end, must become more selective and scientific.

[1] *The American Journal of the Medical Sciences*, January, 1948.

PARA-AMINOSALICYLIC ACID, "P.A.S".

JÖRGEN LEHMANN, of Gothenburg, Sweden, in a preliminary communication to *The Lancet* of January 5, 1946, pointed out that in 1940 F. Bernheim showed that salicylic acid and benzoic acid increased the oxygen consumption and the carbon dioxide production of the tubercle bacillus. Lehmann recorded the conclusion that salicylic and benzoic acids were oxidized as metabolites and that similar chemical configurations possibly played a part in the metabolism of the bacillus. On the basis of these experiments Lehmann investigated more than fifty derivatives of benzoic acid in the hope of finding a substance possessing bacteriostatic properties against the tubercle bacillus. The most active substance found was 4-aminosalicylic acid (*p*-aminosalicylic acid) producing an inhibition of 50% to 75% in a concentration of 1 in 650,000. Lehmann reported that after preliminary animal experiments he had made clinical trial of the substance in man. Tuberculous abscesses after thoracoplasty, up to 50 to 60 millilitres in volume, were treated daily with a neutral 10% solution of *p*-aminosalicylic acid and they healed after some months, even when they had remained unchanged for from three to six months before treatment. Lehmann reported that he had also given the drug by mouth to twenty patients since March, 1944. A blood concentration of two to seven milligrammes per hundred millilitres was achieved by the administration of ten to fifteen grammes a day. Periods of eight days' treatment were followed by three intervals of eight days. Lehmann stated that it was too early to

follow up the results, but that in many cases a prompt fall in temperature, temporary or permanent, coincided with the periods of treatment and had been accompanied by improvement in the patient's general condition, as indicated by a gain in appetite and weight, an increase in the number of red cells and in the hæmoglobin value, and a decrease in the erythrocyte sedimentation rate.

H. Davis, of the British Ministry of Health, has recently discussed the chemical and tuberculostatic properties of para-aminosalicylic acid.[1] He refers to clinical trials made by the London County Council and reported by J. G. Dempsey and M. H. Logg in *The Lancet* in 1947; and remarks that in view of the encouraging nature of the report interest in the drug was stimulated and production was increased. Because of some doubt cast on the purity of the drug used by Dempsey and Logg and also as a result of a request from the Supplies Division of the Ministry of Health, commercial samples of the acid and of a solution of the sodium salt were submitted to the government laboratory. Davis's article is based on the results of this analysis. He states that the pure sodium salt is almost white, but that most of the commercial samples are off-white to pale cream in colour. Expensive methods of purification, he explains, are required to produce the white material, and there is evidence to show that the differences in potency and purity between the pure and the less pure samples are of no pharmacological significance. An aqueous solution of the "cream" sodium salt is yellow to brownish-red; a solution of the "white" is almost colourless. Davis refers to O'Connor's contention that solutions of sodium para-aminosalicylic acid must be practically water-clear if they are to be fully active. He notes that the solutions used in Sweden are much darker in colour then those employed in Britain. He gives details of an investigation of three commercial samples of para-aminosalicylic acid, the conclusions of which were that the samples were of reasonable purity and that the liquid was essentially a solution of para-aminosalicylic acid. Although these findings do not agree with O'Connor's stated requirement, Davis feels justified in accepting the commercial preparations as sufficiently pure for clinical purposes. This is another way of putting the statement already made that the differences in potency and purity between the pure and the less pure samples are of no pharmacological significance.

Davis states that para-aminosalicylic acid and the sodium salt are bacteriostatic for *Mycobacterium tuberculosis*—a concentration of 0·2 to 0·4 milligramme per 100 millilitres of Dubos's medium inhibits the growth of organisms from an inoculum of the H37 strain. So far tests have shown it to possess little bacteriostatic activity against most other common bacteria. Davis points out that para-aminosalicylic acid is distinguished from streptomycin by its remarkable specificity for *Mycobacterium tuberculosis* and by the fact that all attempts so far to induce resistance to it have failed. He goes on to state that the drug is administered orally or parenterally, usually as the sodium salt. Dosage is high—Dempsey and Logg used up to thirty grammes during twenty-four hours in divided doses. This raises a problem, because the aqueous solution is most unpalatable and it is asking too much of patients to give them up to sixty half-gramme tablets to swallow in one day. Davis thinks that specially coated granules may solve the problem; he adds that the drug may be administered intravenously as a 2% solution for continuous injection or as a 5% solution (twenty millilitres) intermittently. Intrathecally 20 millilitres of a 2% to 3% solution have been used without untoward effects.

This brings us to a recent clinical report from A. Erdei, who describes the results in six cases of pulmonary tuberculosis in which the drug was used.[2] The drug was given by mouth to five patients for sixty days and to one patient for four weeks; after this the supply of the drug became exhausted. As supplied to Erdei, the drug (he uses the name "P.A.S" by which it has been described in the lay Press in Australia) was a crystalline powder; from this the sodium salt was prepared and this gave, even at a concentration of 30%, a clear solution as described by O'Connor. Erdei states that the preparation of the sodium salt requires patience and accuracy, and he differs from Davis by stating that the solution, though bitter, has a not unpleasant taste and that this can be readily disguised by flavouring agents. All the patients, who were men, were given twelve grammes of the drug per day. The most striking effect of the drug was the great improvement in the patients' general condition. "This change was most remarkable in the severely toxic, anorexic and apathetic patients, and was observed usually on the third day." The drug "seemed to reduce both the average level and the swing of the temperature, especially when the patients also had large doses of penicillin". The number of organisms in the sputum decreased rapidly and the bacilli looked granular and tended to clump. No toxic reactions were observed and this, Erdei points out, is at variance with the findings of other observers. He makes the obvious suggestion that toxic symptoms may be due to impurities. He realizes that his series is small, but for all that it suggests to him that the action of para-aminosalicylic acid is complex. On the one hand the rapid reduction in the number of bacilli in the sputum, together with the morphological changes noted in them, confirms the bacteriostatic action of the drug. On the other hand the rapid improvement in the clinical picture and the gain in weight seem to indicate a direct pharmacological action on the host. Erdei recalls the fact that in 1947 Youmans *et alii* suggested that by interfering with the enzyme system of the bacilli, para-aminosalicylic acid changed the host's tissue reaction "from necrotic exudative to fibrotic proliferative". The drug seems to have a direct antipyretic action; when it is withdrawn the pyrexia increases and the temperature swings again, though not so much as before treatment. Erdei found that though the swinging temperature returned, the patient's general condition remained satisfactory—night sweats, anorexia and other symptoms of toxicity did not return. He also found radiological changes supporting the view, already mentioned, that the drug promotes fibrosis. Incidentally he thinks that the daily dose of twelve grammes used in the cases reported by him was far too small.

The series of cases reported by Erdei is so small that no sweeping conclusions can be drawn from them. His conclusion, however, is not too far-reaching for acceptance. He states that though the drug cannot be regarded as a cure for tuberculosis, it appears to be very active in the exudative and "toxic forms" of pulmonary tuberculosis and "may prove a valuable adjunct to existing therapeutic measures". Further trial of this drug will undoubtedly be made. A large-scale investigation should be undertaken, and this should, as W. E. Swell, who adds a comment to Erdei's paper, suggests, take place under the ægis of some directing body. While this is being done it is most desirable that exaggerated reports of good results should not appear in the daily newspapers or monthly periodicals to pander to the popular love of sensation, to raise unjustified hopes among the gravely ill and to make it easy in a swing of the pendulum for a useful drug to fall into temporary disrepute. Practitioners will be wise if for the present they do no more than regard the drug as likely to be a "valuable adjunct to existing therapeutic measures".

[1] *Monthly Bulletin of the Ministry of Health and the Public Health Service*, May, 1948.
[2] *The Lancet*, May 22, 1948.

BIBLIOGRAPHY OF SCIENTIFIC AND INDUSTRIAL REPORTS.

For many months there have appeared from time to time in this journal abstracts from the United States *Bibliography of Scientific and Industrial Reports*. These abstracts were published at the request of the Council for Scientific and Industrial Research, Melbourne. Owing to the urgent need for the conservation of stocks of paper, we have been compelled to discontinue the publication of the abstracts. Readers of this journal who wish to do so may see copies of the Bibliography at any of the main city libraries in Australia or at the head office library of the Council for Scientific and Industrial Research, 314, Albert Street, East Melbourne.

Abstracts from Medical Literature.

BACTERIOLOGY AND IMMUNOLOGY.

Cross Immunity in Experimental Spirochætal Diseases.

THOMAS B. TURNER, CHARLOTTE McLEOD AND ELAINE L. UPDYKE (*The American Journal of Hygiene*, September, 1947) have studied cross immunity in experimental syphilis, yaws and venereal spirochætosis of rabbits. They infected rabbits by intratesticular inoculation with three types of Treponema, and left them untreated for a period of six months, by which time the majority of animals had only minimal lesions or healed areas. A control group and all the test ones were then given challenge doses of all three types of organism, inoculated into the shaven skin of the back. It was found that the control animals developed large lesions on the back, while the treated animals developed either no lesion at all or modified and small lesions. The authors discuss the existence of cross immunity as an explanation for their findings, and note that their challenge dose was relatively large. They suggest that the evidence presented may point the way to a possible technique for immunizing special groups of world population against spirochætal diseases.

Penicillin and Staphylococci.

MILTON SEGALOVE (*The Journal of Infectious Diseases*, November-December, 1947) studied the effect of penicillin on growth and toxin-production of enterotoxic staphylococci. He tested the natural resistance to penicillin of five non-enterotoxic strains, and found that they were inhibited by 0·01 unit per millilitre of penicillin, while a group of fifteen enterotoxic strains contained some which were highly resistant to penicillin. Resistance to larger concentrations of penicillin was rapidly acquired, and penicillinase was not identified in filtrates from non-enterotoxic cultures, but was demonstrated in one artificially resistant enterotoxic strain. The addition of penicillin to preformed staphylococcal toxin did not alter the toxin, and addition to fluid cultures did not prevent the formation of toxin. In cultures possessing an artificially induced resistance to penicillin the ability to ferment disaccharides was lost.

Serum Carditis and Rheumatic Fever.

E. FLORENCE McKEOWN (*The Journal of Pathology and Bacteriology*, October, 1947) has studied experimental serum carditis and its relationship to rheumatic fever. She treated groups of rabbits with horse serum, given intravenously or intraperitoneally, and noted cutaneous flushing, a rise in temperature after twelve to fourteen days, and the development of a skin reaction. The animals were then given a small dose of serum intravenously "to absorb circulating antibody" and finally another dose similar to the first. Groups of animals were sacrificed at from twenty-six days after the initial injection, and histological studies were made of arteries of the heart, lungs and viscera. Lesions of the Aschoff type in varying degrees of development were found particularly in the coronary system, from early necrosis of collagen fibres up to healing, fully organized nodes. Sensitivity reactions of a similar type could not be produced by injections of killed hæmolytic streptococci. The author believes that her evidence supports the theory that hypersensitivity of the anaphylactic type can explain rheumatic carditis, but she has no clear indication that the hæmolytic streptococcus is the sensitizing bacterial antigen.

Prevention of Bacterial Growth by Sulphonamides.

N. WALKER, R. PHILIP, W. M. SMYTH AND J. W. McLEOD (*The Journal of Pathology and Bacteriology*, October, 1947) made a series of observations on the prevention of bacterial growth by sulphonamides with special reference to the Harper and Cawston effect, in which it is found that medium treated by addition of lysed horse blood gives much higher and reproducible tests when used to demonstrate the effect of sulphonamides upon organisms grown in such a medium. The authors confirmed this observation and showed that the hæmoglobin of the blood was closely associated with the effect, and that blood other than equine would not achieve it. Experiments were devised to test whether the horse hæmoglobin removed sulphonamide inhibitors such as para-aminobenzoic acid from the medium, or had a potentiating effect upon the sulphonamide effect referred to above, or whether both these factors operated. A conclusive result was not obtained, but the authors suggest that both may play a part.

Mechanism of Adaptation of Virus to Mice.

G. K. HIRST (*The Journal of Experimental Medicine*, November, 1947) has recorded studies on the mechanism of adaptation of influenza virus to mice. He found that strains of virus isolated in chick embryos, when first introduced into the mouse lung, multiply readily, though they produce no disease. After four or five passages in mice, they produce extensive pulmonary consolidation and become lethal. They may develop during this process an increasing capacity to agglutinate guinea-pig red cells, but do not change towards chicken red cells. The strains of virus isolated during mouse passage change in antigenic pattern, and this can be shown in cross tests with antisera. The mouse-adapted strains became different from the parent strain and from each other. The author discusses the importance of this in human strains of virus and their pathogenic nature.

Differential Agglutination of Human Erythrocytes.

LAWRENCE E. YOUNG, RICHARD F. PLATZER AND JAMES A. RAFFERTY (*The Journal of Laboratory and Clinical Medicine*, May, 1947) have made an evaluation of technique for the differential agglutination of human erythrocytes. After transfusion of red cells lacking an agglutinogen present in the cells of the recipient, it is possible to agglutinate the cells of the recipient by use of an appropriate antiserum, and the remaining cells are enumerated by counting methods. Conversely, after transfusion of erythrocytes containing an agglutinogen not present in the cells of the recipient, but for which the recipient's serum has no specific agglutinin, the donated corpuscles can be differentially agglutinated. The authors describe their technique in detail and evaluate the results statistically, after discussing factors affecting the accuracy of the results. They found that antisera of sufficient potency, avidity and specificity were necessary and that dried antisera had the additional advantage of stability. Reticulocytes are agglutinated in the same manner as mature cells. The uses of the technique are in determining the length of life span of normal red cells, in the investigation of transfusion reactions, in the study of the effects of storage, preservation and transport of blood, and in the study of the hæmolytic anæmias.

Relative Humidity and Air-Borne Bacteria.

EDWARD T. DUNKLIN AND THEODORE T. PUCK (*The Journal of Experimental Medicine*, February, 1948) have studied the lethal effect of relative humidity on air-borne bacteria in a large chamber of 640 cubic feet capacity, using pneumococci Type I as the test organisms. When the organisms were suspended in broth, saliva, or 0·5% saline solution, the mortality rate was very high at a relative humidity of 50%, but above or below this point, organisms survived for a very long time. When the suspending fluid was saline free, this phenomenon disappeared. Cultures of hæmolytic streptococci Group *C* or staphylococci sprayed from broth behaved similarly, though the lethal effects were numerically smaller. The results suggested to the authors that there was a critical level of cellular hydration at which microorganisms became much more sensitive to toxic agents than when either more or less water was in contact with the cell.

Streptomycin Therapy.

E. J. PULASKI AND S. F. SEELEY (*The Journal of Laboratory and Clinical Medicine*, January, 1948) have recorded further experiences with streptomycin therapy in United States army hospitals. They have tabulated the properties of the drug which should be remembered for its efficient use: its basic nature and solubility in water, its stability in solution, the failure of enzymes or bacteria to destroy it and the highly selective antibacterial action it exhibits, certain strains of nearly all species being drug-fast, that is, resistant to its action. The activity of the drug is depressed by low pH values, dextrose, reducing substances, and high concentrations of inorganic salts. No absorption takes place after administration by mouth or by nebulization. Toxic effects are not seen after short courses of the drug, but are frequent after long-continued treatment. In infections of the urogenital tract, 13% of organisms were naturally drug-fast; in a series of 465 patients 34% were cured and 21% improved. Factors such as calculi, paraplegia, or advanced renal disease operated here, and the drug seldom obviated the need for surgery. Careful selection of patients is needed in this group. Ten patients with tularæmia all responded dramatically to the drug.

Patients with bacteriæmia from various organisms received benefit, 26 or 33 patients in whom penicillin and/or sulphadiazine had failed responding to two to four grammes of streptomycin in divided doses for fourteen days. Twelve of sixteen patients with purulent meningitis recovered. Streptomycin did not appear to be of benefit for brucellosis, as patients with temporary improvement all relapsed. In sixteen cases of dysentery, oral and intramuscular administration of streptomycin produced beneficial results, time of treatment varying from one to twelve days. It did not appear justifiable to use the drug in ulcerative colitis or amœbic colitis. Fifty-eight of 63 patients with peritonitis of fæcal origin recovered, but the addition of penicillin was necessary in advanced cases where localization had begun. No benefit has resulted from local applications to wounds, and for complex wounds of battle casualties, streptomycin was much less effective than penicillin.

Proteinase and Hæmolytic Streptococci.

SIDNEY ROTHBARD AND EDGAR W. TODD (*The Journal of Experimental Medicine*, April, 1948) have studied the production of hæmolytic streptococci in various clinical conditions of a proteinase. Cultures collected from patients and healthy carriers over a period of seven years were grouped and typed, and their ability to produce the enzyme was tested; antistreptolysin titres in the patients' serum were also observed. It was found that some strains did not produce the ferment, while others of the same serological type did so, and that identical clinical infections might be produced in the one case by a proteinase-producing strain, in another by a strain which lacked this enzyme. Sulphadiazine therapy of patients did not affect proteinase production by the infecting streptococci. Since proteinase digests both the M protein of the organism and streptokinase, it was rare to find more than a trace of these two substances in a strain of streptococcus which was a good proteinase producer.

HYGIENE.

Ringworm of the Scalp.

L. P. MACHAFFIE, S. F. PENNY AND E. C. BECK (*Canadian Journal of Public Health*, March, 1948) report a clinical and laboratory investigation of an outbreak of ringworm of the scalp which occurred among public school children. The Wood's lamp, which causes the infected hairs to show characteristic fluorescence, was employed in routine examinations. By this means early cases of infection with no clinical signs were detected and control measures effected. It also made possible the selection of more satisfactory specimens for laboratory examination. In the laboratory a total of 84 specimens were examined; evidence of infection was found in 59 cases. Sixty-seven specimens were examined both microscopically and culturally, *Microsporon audouini* being detected in 37 instances. In fifteen cases there was no evidence of infection from either test, in nine cases infection was demonstrated by cultural methods and in six by means of the microscope. *Microsporon audouini* was the only fungus isolated from the infected hairs and skin scrapings. For treatment X-ray epilation was found necessary in most cases. Manual epilation, clipping the hair and the use of various fungicidal ointments were effective in a few cases. Control measures included the supply of Wood's lamps to schools and the training of nurses in their use; the instruction of barbers in preventive measures; the issuing of information to hospitals and doctors; the furnishing of parents with printed instructions about home care. Pupils were permitted to attend school if they wore satisfactory protective caps which were made in school and supplied free. The control measures on the whole proved fairly effective.

Handkerchiefs Impregnated with Disinfectant.

K. DUMBELL *et alii* (*The Lancet*, November 29, 1947) have found that a practical disinfecting action can be bestowed on cotton handkerchiefs (and woollen fabrics) by immersing them in a solution of phenylmercuric acetate and then in a solution of sodium bromide. The latter solution precipitates the relatively insoluble disinfectant, phenylmercuric bromide, within the textile fibres. The authors, who write from the Common Cold Research of the National Institute for Medical Research, Harvard Hospital, Salisbury, Wiltshire, point out that a disinfectant suitable for this purpose should have a very high phenol coefficient, as relatively little would diffuse out, and that it should be non-toxic.

Diphtheria Toxoid.

L. GREENBERG AND D. S. FLEMING (*Canadian Journal of Public Health*, April, 1948) state that, so far as can be judged by guinea-pig experiments, the combination of diphtheria toxoid with other antigens enhances the immunizing efficiency of the diphtheria toxoid. They state that it has been shown in a previous experiment that the concentration of pertussis organisms usually found in commercial preparations at least doubles the immunizing efficiency of the diphtheria toxoid. The present experiments have shown that when a third antigen, such as tetanus toxoid or scarlet fever toxin, is added to this combination the immunizing efficiency of the diphtheria toxoid is enhanced five to ten times.

Contact Typhoid Fever in a Mental Hospital.

M. DOROTHY BECK, LUCY E. FRENCH, ESTHER ALLEN AND MALCOLM H. MERRILL (*The American Journal of Hygiene*, September, 1947) report a laboratory and epidemiological investigation of contact typhoid fever in a State mental hospital. From 1941 to 1944 there were twenty cases and five deaths from the disease, and a preliminary survey showed them to be amongst women patients in a single block of three wards; cultures of fæces and urine disclosed that nineteen patients were infected, three of whom later died of clinical typhoid fever. Phage typing showed all organisms except one to be type *C*; the single type *F* was in a patient who had a history of typhoid fever ten years before. Three hundred and eighty-two women were bled for serological tests, and then all were immunized, and a proportion tested for agglutinins at a second bleeding. The titres found at the first bleeding suggested that a silent unrecognized infection had been going on, and direct patient-to-patient infection took place as the reservoir of organisms was built up. Carrier patients were isolated, and released when no organisms could be grown, and as a result of the demonstration of the hazards of the disease for patients in mental hospitals, a standard programme for immunization of all inmates in State institutions in California has been adopted.

Dental Caries.

K. L. SHOURIE (*The Indian Journal of Medical Research*, July, 1947) has made a dental survey in Ajmer-Merwara, a province in Rajputana with a population of half a million people in which, although the total caloric intake was satisfactory, the amounts of animal proteins, calcium and vitamins *A* and *C* consumed were quite inadequate. Of infants under one year 20% died, and anæmia and malnutrition in mothers were very common. The area is recorded as being one of endemic fluorosis, though no figures are given. Careful examination and recording of caries in the mouths of 668 children showed that 59·2% were entirely free from caries, and in various adult groups the examination showed at least half to have entirely sound teeth. The author discusses the occurrence of mottled enamel in the caries-free subjects, and the possible relationship between the two. He suggests that this survey provides further evidence that inadequate diet alone cannot be upheld as a factor in the production of dental caries.

Zircon.

H. E. HARDING (*British Journal of Industrial Medicine*, April, 1948) has investigated the toxicology of zircon, a compound containing zirconium and silicon, which has been used for some time as a substitute for silica in the foundry industry as a parting powder and as a paint for moulds. He states that no record has been found in the literature on this subject. Suspensions of finely ground Travancore zircon were injected intravenously into a rabbit, intraperitoneally into cavies and intratracheally into rats. In none of these animals was there any evident interference with health or growth. Histological examination of tissues obtained several months later suggests that zircon is a singularly inert substance. Further experiments are in progress.

Lung Fibrosis in a Silver Finisher.

H. E. HARDING (*British Journal of Industrial Medicine*, April, 1948) reports that the lungs of a man, aged sixty-three years, who had spent all his working life as a silver finisher, contained scattered microscopic fibrosis of the "reticulation" type with linear and radial collagenous fibrosis. The patient had had no unusual exposure to silica and his lungs did not contain an abnormal amount of this substance. The author suggests that he may have been unusually sensitive to the presence of inhaled iron oxide which is commonly inert.

British Medical Association News.

ANNUAL MEETING.

THE annual meeting of the Tasmanian Branch of the British Medical Association was held at the Tasmanian Museum, Hobart, on February 21, 1948, Dr. J. L. Grove, the President, in the chair.

MINUTES.

The minutes of the previous annual meeting held on February 8, 1947, were read and confirmed.

ANNUAL REPORT OF COUNCIL.

The annual report of Council was read. The President in moving its adoption referred to the satisfactory membership of the Branch. He discussed the relationship between the State Government and the Branch and also referred to the friendly societies' lodge agreement. He expressed the opinion that the Southern Division of the Branch should display a keener interest in its own affairs than had recently been in evidence. In conclusion he expressed the appreciation of the Branch of the services rendered by Dr. C. Craig as representative to the Federal Council. The motion for the adoption of the report was seconded and carried. The report is as follows.

Membership.

The membership as at January 1, 1948, was 167 compared with 136 at the beginning of 1947.

Analysis.

As per last report		136
Resumed membership		4
Elected during 1947		5
Transfers from other States and England		34
		179
Less		
Transfers to other States	8	
Resignation	1	
Deceased	2	
Lapsed	1	12
		167

Meetings.

Three ordinary meetings and one special meeting of the Branch have been held since the last annual meeting, the average attendance being 27·5.

At the special meeting Dr. J. G. Hunter, General Secretary of the Federal Council, gave an interesting talk on the English National Medical Service following his visit to England.

Dr. T. H. Goddard, Director of Tuberculosis, State Health Department, gave a lecture at one of the ordinary meetings on "The Work of the Tuberculosis Committee of the National Health and Medical Research Committee" in which reference was made to "B.C.G.' Vaccine".

Twelve meetings of the Branch Council were held, the attendance being as follows:

Dr. J. L. Grove	12	Dr. C. Craig	10
Dr. J. B. Hamilton	9	Dr. P. Braithwaite	2
Dr. T. H. Goddard	5	Dr. J. P. Millar	7
Dr. L. N. Gollan	6	Dr. G. A. Robbie (vice Dr. Braithwaite)	7
Dr. J. A. Gollan	9		
Dr. J. Walch	8	Dr. R. Wall (vice Dr. L. N. Gollan)	2
Dr. G. M. W. Clemons	8		
Dr. T. Giblin	10		

General.

The Branch has been represented on the Federal Council by Dr. C. Craig and Dr. T. Giblin. Dr. Craig asked that he should be relieved from this duty on the termination of his period of appointment in December, 1947, and Dr. J. L. Grove was appointed by the Branch Council in his place. Dr. Craig has earned the gratitude of the Branch for the manner in which he has carried out the arduous duties of our federal representative during the past seven years.

Dr. J. Rail Robertson has continued to act as the representative of the Branch on the Federal Contract Practice Committee.

The Ethics Committee for the past year consisted of the President and Medical Secretary and Dr. Craig, Dr. T. Giblin, Dr. Clemons, Dr. Walch, Dr. J. Gollan and Dr. L. N. Gollan.

During the year the Branch Council has been active in medico-political activities. In March a subcommittee consisting of the President and Dr. Giblin, Dr. Butler and Dr. Clemons was appointed with the object of compiling a statement for presentation to the Minister for Health on the question of country medical services.

On this matter and that of the payment of visiting staffs to public hospitals, your Council has met the Minister for

BRITISH MEDICAL ASSOCIATION.
(TASMANIAN BRANCH.)
Statement of Receipts and Payments for the Year Ended December 31, 1947.

RECEIPTS.	£ s. d.	£ s. d.
To Balance Brought Forward		405 2 10
„ Members' Subscriptions		668 6 6
„ Interest—		
Debentures (Australian Mutual Provident Society)	4 15 0	
Hobart Savings Bank	4 18 8	
A.C.T. Bonds	28 6 6	
		38 0 2
„ Exchange		4 0
„ Members' Subscriptions for Centenary Meeting (Launceston)		53 11 0
„ Refund—Southern Division		2 13 6
		£1167 18 0
To Balance Brought Down		368 10 6

STATEMENT OF ASSETS.	£ s. d.	£ s. d.
Furniture at Library		20 0 0
Australian Consolidated Treasury Bonds		860 0 0
Australasian Medical Publishing Company, Limited—Debentures		120 6 3
War Savings Certificates		133 0 0
Cash at Bank—		
Hobart Savings Bank	223 11 5	
English, Scottish and Australian Bank, Limited	144 19 1	
		368 10 6
		£1501 16 9

PAYMENTS.	£ s. d.	£ s. d.
By Federal Council Capitation Fees		68 0 0
„ British Medical Association, London—Capitation Fees		182 6 6
„ Southern Division Capitation Fees		33 10 0
„ Northern Division Capitation Fees		35 10 0
„ Australasian Medical Publishing Company, Limited—Capitation Fees		135 10 0
„ Secretary's Salary		195 16 8
„ Postage, Duty Stamps and Petty Cash		45 11 5
„ Printing and Stationery		36 5 6
„ Rent of Room		12 6
„ Secretary's Travelling Expenses		1 10 0
„ Office Equipment		5 2 0
„ Bank Charges		2 11 8
„ Audit Fee		2 2 0
„ Tasmanian Association of Scientific Societies (Subscription)		2 2 0
„ Expenses—Centenary Meeting (Launceston)		52 17 3
„ Balance Carried Down		368 10 6
		£1167 18 0

Audited and found correct.
(Sgd.) ADAMS AND BENNETTO,
Chartered Accountants (Aust.).

Health in conference on two occasions, March 22, 1947, and August 30, 1947, and the Director of Hospitals and Medical Services on two occasions, April 19, 1947, and February 21, 1948.

Evidence was presented on June 20, 1947, to the Parliamentary Standing Committee on Public Works with regard to the building of hospitals.

The Council has been active in matters concerning lodge practice and is still negotiating for terms consistent with the Federal Common Form of Agreement.

Dr. F. W. Fay and Dr. C. Craig have represented the Divisions on the Tasmanian Post-Graduate Committee in Medicine.

The Council is pleased to record the fact that Dr. J. H. B. Walch is the recipient of an address from the Parent Body in appreciation of his many years of service to the Association.

Financial Statement.

The Honorary Treasurer, Dr. J. H. B. Walch, presented the statement of receipts and expenditure for the year ended December 31, 1947, and moved its adoption. The motion was seconded and carried. The statement is published herewith.

Reports of Divisions.

The annual report and financial statement of the Northern Division and the financial statement of the Southern Division were read and received.

Election of Office-Bearers.

The President announced the result of the ballot for office-bearers as follows:

President-Elect: Dr. T. G. H. Hogg.

Members of Council: Dr. R. Whishaw, Dr. G. M. W. Clemons, Dr. C. Craig.

The President declared the office of vice-president vacant as no nomination had been received.

Dr. A. Ormond Green was elected Medical Secretary and Dr. J. H. B. Walch was reelected Honorary Treasurer.

Messrs. Adams and Bennetto were reelected auditors for the ensuing twelve months.

Dr. J. B. Hamilton, Dr. J. L. Grove and Dr. J. H. B. Walch were elected Trustees of the Branch.

Induction of President.

Dr. J. L. Grove inducted Dr. J. B. Hamilton to the office of President for the ensuing year and vacated the chair in his favour. Dr. Hamilton thanked the members for his election.

Retiring President's Address.

Dr. J. L. Grove read his president's address on the subject of medical ethics.

Dr. Grove said that the subject of his address had been chosen for him by his colleagues of the Branch Council. During a meeting at which ethical matters were discussed, it had been suggested that the attention of members of the Branch should be drawn to the Code of Ethics, and that this might be the theme of the President's retiring address for the year.

In the editorial of THE MEDICAL JOURNAL OF AUSTRALIA for January 10, 1948, they were reminded that the British Medical Association had two main objects. The first was scientific, and the second was "the promotion of the honour and interests of the members of the medical profession". At times all members were apt to forget their real objectives, and the subject chosen for the address, even though in its attainment it produced the greatest of difficulties, was still only the second objective of the Association.

It was well to think back to the early history of the Association and to see what were the objects when the original Provincial Medical and Surgical Association held its first meeting in 1832. The fifth object, now given as the second object, had been stated as follows: "Maintenance of the honour and respectability of the profession, generally, in the provinces, by promoting friendly intercourse and free communication of its members, and by establishing among them the harmony and good feeling which ought ever to characterize a liberal profession." Honour, respectability, harmony and good feeling were all words worth pondering on and Dr. Grove hoped that the members of the Association would always be able to describe themselves as members of a liberal profession. His remarks that evening therefore would be on and around the subject of medical ethics.

When he first gave his address some consideration, it seemed to Dr. Grove that the obvious thing to do was to get away from the limited range of text-books of medical ethics, and try to see what was meant by the term "ethics" itself. He thought this would be easy. He sought out a legal colleague who provided the literature, but the difficulties began immediately. Naturally he searched for a short definition that would suit his purpose. He could find none. What he did find was that ethical studies sought to determine a whole host of things. They sought to answer such questions as: What things are ultimately good? What is the basis of moral obligation? By means of what faculty do we recognize moral obligation? Is it by the faculty of reason or simply by feeling? Is it perhaps some unique extra sense? What do we mean by a right action? What lets us distinguish right actions from wrong actions?

The philosophers found all sorts of difficulties with ethical questions. In the first place they declared that it was not even possible to prove an ethical proposition. Ethics was not a science and it was always possible to represent any answer that might be given to ethical questions as the expression of a purely personal taste. Secondly, ethical questions overlapped each other. Thirdly, there was the utmost difficulty in delimiting ethics from politics, from psychology, and so on. Fourthly, and by no means lastly, the philosophers could not even agree what was in fact the central problem of ethics.

At this stage one came up for air. It might be asked, why should Dr. Grove include the enunciation of a philosophical problem in his address, or in any dissertation on medical ethics. He had done it because he felt that it was wise and necessary to consider ethics as a philosophical study rather than as simply a conglomeration of rules. It seemed that one must assume that everyone had certain moral intuitions which might be called ethical intuitions, and, for most people, these were vague and uncoordinated. In a group of persons, such as, for instance, in a profession, these intuitions would often be inconsistent. Therefore, for practical reasons and because of all these obscurities, it became necessary firstly to have a shorter definition of ethics, whether it was complete or not, and secondly, to lay down a code which would be a guide and an agreed upon standard of reference.

Webster, in his dictionary, in the broad sense defined ethics as a system of rules for regulating the actions of men. It was well to remember that as he extended his definition he referred not only to morality but also to manners. Downes in his text-book stated that medical ethics was capable of broad definition as "the moral obligations of a medical practitioner in the practice of his profession". He classified the problem along the lines of the three relationships of medical men, and for each of these he quoted an aphorism. Firstly, practitioners had the relationship with their colleagues. The aphorism was the Golden Rule, or in other words: "Play the game." Secondly, there was the relationship with patients, and here the aphorism was: "The safety of the patient is the supreme law." Ruskin wrote: "The physician's duty is to keep the nation in health and it is his duty to die rather than leave his post in plague." Thirdly, there was the relationship to the State, and here the aphorism was: "Render unto Cæsar those things that are Cæsar's." This meant, of course: "Obey all lawful authorities."

In all these matters they had to remember that they were held in esteem and respect by the public because it realized that doctors followed a profession and not a trade. Medical practice was presumed to be not only a means of earning an income, but the product of a natural desire for a particular career. That career was known to be one which entailed a lifetime of service to one's fellow men and one which for its success demanded the determination to give of one's best and to achieve something worth while regardless of self. And so, not forgetting these principles, the profession for convenience and reference had set up ethical rules. These were the written expression of ethical standards. It was only fit that at an annual meeting members should be businesslike and do some stocktaking. They therefore asked themselves: "How are we standing up to our ethical code?"

It would be remembered that the practitioner's first relationship was that with his colleagues. At the onset it had to be pointed out that the Ethical Committee of the Branch in the previous year had had to be called together on only one occasion. Ethical matters had been discussed a little more in Branch Council. It was well and a matter for congratulation that these discussions had centred only on relations with colleagues, which, although Dr. Grove had put them as number one, were, of course, of secondary importance to the relationships with patients and the State.

Ethical problems sometimes had to do with Press publicity. It could not be too strongly emphasized that such paragraphs were a source of great irritation to members of the profession. The Ethical Rules were quite specific in this

matter. They stated that no member should permit the publication in the lay Press of autobiographical or biographical notices, whether or not professional experience was discussed.

In the deliberations of the Branch Council in these matters the question of the standing of a medical practitioner as a member of the community had been raised. No real answer could be given to this problem. A medical practitioner was also a member of the community, and it could be argued that no notice could be taken of mention of his name in social, sporting or political or like connexions. This point was raised by Downes. On the other hand it was well that due weight should be given to the full meaning of the Ethical Rule on the subject, which referred to autobiographical and biographical notices. On this matter members should search their consciences when the occasion arose, and it would seem desirable that the accent should definitely be on the avoidance of any Press notices.

This was a convenient stage at which to make some mention of the position of the Branch Council and the Ethics Committee in these matters. Here it was extremely important that members should realize that the Branch Council and the Ethics Committee were both in the nature of being what the law regarded as a quasi-judicial body. As such the law gave them considerable recognition. Dr. Grove's legal colleague had drawn his attention to no less an authority than Halsbury's "Laws of England" in the matter of quasi-judicial powers. It was quite obvious that because of the importance of the trust imposed in these bodies and because of the nature of the protection which they were afforded, their rules of procedure should always be followed meticulously. In addition it was most important that such bodies should have "due regard to the dictates of natural justice". The reference further stated: "the members of the tribunal must not be judges in their own cause, or have any interest or bias in the matter".

This last reference took Dr. Grove to the question of who should be responsible for the making of complaints about breaches of ethics. There was a body of feeling which considered this should not be left to individual members, but should be rather a function of the Branch Council or the Ethics Committee. It was quite obvious that natural justice could not allow the Council or the Ethics Committee to accuse and then act as the judicial body sitting on the case. A member of either committee could lodge a complaint, but it was obvious that he could not then take his seat on either committee whilst the charge was being considered.

It might be argued that the senior men of the profession should take the responsibility of drawing attention to alleged ethical breaches. Quite so, but was it not better that these men should be reserved for the very responsible and even technical business of exercising these quasi-judicial functions? Dr. Grove saw no way of avoiding the onus of the lodging of complaints falling on the individual. If his complaint was ethically sound, he could have no misgivings about it.

Further in regard to the question of publicity, the fear had been expressed that members in the employ of the State and similar instrumentalities were perhaps taking too much for granted about the licence which their position might give them with regard to ethical rules. Clearly it was often to the public good, perhaps at times a public necessity, for publicity to involve the officer's name. Nevertheless, private practitioners, who still constituted the great bulk of the profession, were frequently irritated by publicity which they regarded as having an unnecessary personal note.

It was worthy of note that Downes stated that for practical purposes medical ethics "include the etiquette involved in relations with fellow practitioners a breach of which is one of manners or good taste rather than of moral principles, and it embraces a great deal of the financial side of a doctor's life, a side so unpleasant and full of pitfalls for the young medico".

The gradual swingover from private medical care to State medical care brought with it problems which had never before existed. Under the old system of public hospitals and very limited State medicine, the mere fact that there was no competition between the private practitioner and the State medical officer meant that the only real difficulties between medical men were minor. Now, however, especially in Tasmania, although the problem had always existed there to a degree, the situation was vastly altered. They had the State's medical officer in open and active competition, whether he liked it or not, with the private practitioner. It seemed to Dr. Grove that neither of these groups had given careful thought to the situation. The private practitioner was apt to think only of a living being filched from him, rather than: "Is this thing good for my patient?" The State medical officer on the other hand was apt to forget that whatever might be the merits of State medicine, he was in the position of conducting work in entirely unequal competition with his private colleagues. Now, whatever each might think of the other's position in the general scheme of things, it was most essential that both should preserve exactly the same standard of medical ethics, and this could only be the standard of the Ethical Code. Dr. Grove was afraid that sometimes the tendency was for the private practitioner to let his patient feel that if he went to Dr. X in the government service, he would simply get indifferent advice churned out of a government machine. The State medical officer, Dr. Grove feared, had on occasions gone on his way blissfully forgetting a varying amount of what he had learnt concerning his relationships with brother practitioners. Unfortunately one heard of far too many examples of State medical officers undertaking treatment of patients already under the care of private practitioners, without any consideration of the usual courtesies. In his own personal experience in the last few weeks he had had two examples in which State care as a result of careless ethics had acted to the detriment of the patient.

Next came the practitioner's relationship with his patients, in so far as it could be separated from that with colleagues and the State. Complete observance of the first object of the British Medical Association naturally constituted the first obligation to patients. It should not be necessary to remind members that the first object was the promotion of the medical and allied sciences.

There was no doubt that they often tended to fall short in this respect. They all knew men who had not attended even 10% of the scientific meetings held in a year. The annual reports this year showed that the Branch and the Divisions had not provided the number of regular scientific meetings throughout the year that had been reported in previous years. The fact that the Branch had been unusually active in the medico-political sense during the year was no excuse for this. Neither did the fact that Tasmania as a whole had never had such a feast of scientific meetings as in the past year. This was due to the activities of the Tasmanian Post-Graduate Committee in Medicine. All members of this committee happened to be members of the British Medical Association, but it should not be lost sight of that this body was a coordinating unit. The recent tendency to leave the arranging of scientific functions to this body was much to be regretted. This was surely primarily a British Medical Association responsibility and an ethical duty.

The second aphorism was that the safety of the patient was the supreme law. The Hippocratic oath was a very good expression of the practitioner's duty to the patient.

Dr. Grove found it practically impossible to separate the practitioner's relationship with patients from his relationship with the State.

If ever there was need for practitioners to analyse themselves individually and collectively in the light of these aphorisms, it was now. He spoke, of course, especially of the impact of State medicine upon the profession.

The State, by offering salaries which were, generally speaking, inadequate for its appointments, immediately opened itself to the criticism that it was seeking only to provide a service and was not very much interested in the quality of that service. It was of the utmost importance that the profession stood four-square against this.

The members of the Branch might have to change their minds as to what constituted an adequate salary, bearing in mind that a salaried appointment generally had specific hours and might be far less wearing than private practice. But they must see that government instrumentalities were not allowed to lower standards by setting poor limits to salaries. Poor salaries would only put unqualified men in positions which required high standards of skill. A serious duty was thus thrust on members. Those in administrative positions should work to see that the terms and conditions offered by the State were adequate to the extent of attracting the best possible applicants. Those in an advisory capacity, as, for example, members of the Branch Council and members of hospital boards and similar organizations, should do the same. The responsibility of members of public hospital boards was heavy, because these were men who had a practical experience of both private and State medicine. They were largely responsible to the profession for seeing that each aspect was given due consideration.

Then finally there was the person applying for State positions. This member had to search his conscience with regard to the salary he would accept in just as careful a manner as he would consider the fee to be charged for a particular professional service in private practice.

The Branch Council had realized its obligations in this respect and had given very active consideration to questions of this nature during the year. Dr. Grove urged its importance on members. If ever they were in doubt, it was always safest to consult the Council through its Medical Secretary before they acted.

Coming more closely to the third relationship, that to the State, Dr. Grove feared that it was here that it was hardest to keep deliberations on the higher plane. The profession was the only body fully qualified to advise the State on such measures as the so-called nationalization of medicine. The British Medical Association should therefore be in the forefront. It was the only organized body of medical men, and embraced the vast majority of doctors. But where did its members stand? Dr. Grove submitted that they had fallen down badly here. The simple fact was that governments did not as a general rule consult the Association. Dr. Grove could not presume to say why. But, until the members of the Association were in the picture regularly, they were failing in their ethical duties. They should protest about the failure of the State to consult them. It was still more important, however, that they should set out to show the State that their advice was so valuable that the question of failing to seek it simply did not arise.

Shortly, members of the Branch would be asked in a *questionnaire*, under what circumstances should negotiations be conducted with the State in the Federal sphere as far as nationalization was concerned. In answering this every member should remember that when the right to negotiate was abandoned, so must the opportunity to advise be regarded as lost. Nationalization was the problem of the moment no less in State circles than in the Commonwealth as a whole. It was most important to keep thoughts on the highest plane. The ethical question was whether nationalization was good. Firstly, was it good for the people? It was only when that was answered that members should ask in the second place, was it good for them. They must determine these things. This was their duty and their right.

If it was good in the main, then they were bound to cooperate. If not, they were in duty bound to show why not. Further, they were either bound to prove the good of the *status quo* or to elaborate a better plan. Having done so, they must fight with the weapons of reason and education, but it seemed to Dr. Grove that it would need to be a most extreme situation which would make it ethical for members of the Association to cease all negotiations or to stage a virtual strike. Let them remember that the British Medical Association was not a political body. Once the law of the land was laid down, it was for practitioners to follow the law.

Dr. Grove went on to say that he wished to speak briefly of a Tasmanian State matter, that of the country hospitals. He felt that a lot of doubts and worries would be solved if both the State and the profession collectively and individually went back to the Hippocratic oath, and dwelt upon the sentence, "also I swear by the gods to cut no one for stone, but to leave this operation to those whose profession it is". This should be taken to its logical conclusion. This matter was so big that only by conference between the Government and the profession could it be properly settled. Calm deliberation by both sides, giving full weight to the above principles, was necessary. Patients would have everything to gain from the hospital set-up, which would eventuate from this.

Robb in his review of health services in New Zealand seemed to Dr. Grove to have put the situation very well. He pointed out that, however valuable the traditional system might have been in the past, by means of which the general practitioner attempted simultaneously major work in medicine, surgery and obstetrics, and in which most specialists achieved that status through general practice, it had now been completely outmoded. Robb pointed out the well-known fact that geography was no longer a barrier because of the excellence of modern road and air transport. He went on to say that general practice was changing, or should change, in the direction of more preventive, educative and psychological measures; it required an aptitude, attitude, and training very different from that of the scientific physician and surgeon; it was a huge field and a worthy field of its own; no man could serve his patient adequately as both general practitioner and specialist—one branch or other, or both, would be done poorly.

Robb also pointed out that the specialist's practice was likewise advancing and made corresponding demands on the specialist.

The country hospital problem resolved itself largely into a question of whether a particular country hospital should function as a base hospital or not. If full weight was given to the ethics of the matter, rather than to the expediency of their personal situation, the right answer would be obtained.

Dr. Grove said that in the short time available he had been able only to skate around the subject, but as he had ended by discussing the relationship of the practitioner to the State, he had, in closing, to remind those present that whether the profession as a whole was a party to negotiations, or whether the individual was involved as such, the Branch and Federal Councils were the correct negotiating bodies. They were the practitioners' elected representatives. They had been chosen for their experience and common sense. They were charged with making a study of medico-political matters. As the members of the Branch had thus given the representatives their trust, it was but ethical to stand faithfully and squarely behind their work. Difficult days lay ahead. Strong councils, Federal and State, having the unqualified support of members, would see them through.

VISITORS.

The President, Dr. J. B. Hamilton, welcomed to the meeting the Editor of THE MEDICAL JOURNAL OF AUSTRALIA and Dr. Darcy Williams, President of the Ophthalmological Society of Australia (British Medical Association) and invited them to address the meeting.

VOTE OF THANKS.

The meeting passed a vote of thanks and appreciation to the Lay Secretary for his work during the previous year.

VICTORIAN BRANCH NEWS.

THE following correspondence on the subject of streptomycin is published at the request of the Victorian Branch.

[COPY.]

British Medical Association,
Victorian Branch,
426 Albert Street,
East Melbourne, C.2,
23rd March, 1948.

Dr. F. E. Cox,
Commonwealth Health Department,
A.C.A. Buildings,
118 Queen Street,
Melbourne, C.1.

Dear Sir,

As members of the medical profession in Victoria are not clearly informed on the method by which Streptomycin may be obtained for the treatment of patients, and as the statement from the National Health and Medical Research Council recently published in THE MEDICAL JOURNAL OF AUSTRALIA is apparently inaccurate, would you be good enough to supply the following information:

(i) what procedure is to be adopted by a medical practitioner to obtain Streptomycin for the treatment of a patient; and

(ii) for what conditions will Streptomycin be made available by the Committee which it is understood has been established in this city?

Yours faithfully,
(Signed) C. H. DICKSON,
Medical Secretary.

[COPY.]

Commonwealth of Australia,
Department of Health
(Victorian Division),
A.C.A. Building,
118 Queen Street,
Melbourne, C.1,
12th April, 1948.

Dear Dr. Dickson,

In reply to your letter of the 23rd March I must advise that I forwarded it to the A/Director-General of Health, who has answered your questions as follows:

The information contained in the statement published in THE MEDICAL JOURNAL OF AUSTRALIA of March 13, 1948, on pages 349-351 is accurate.

(1) Application for supplies of Streptomycin should be made to the Senior Commonwealth Medical Officer of the State and be accompanied by clinical notes and radiographs.

(2) The conditions for which Streptomycin will be made available are specified on page 350 of the journal.

(Signed) H. E. DOWNES,
A/Director-General of Health.

It would be appreciated if you would kindly inform me in which particulars it is considered that the published statement is inaccurate.

Yours faithfully,
(Signed) F. E. Cox,
Senior Commonwealth Medical Officer,
Victoria.

Dr. C. H. Dickson,
Medical Society Hall,
426 Albert Street,
East Melbourne, C.2.

[COPY.]

British Medical Association
(Victorian Branch),
426 Albert Street,
East Melbourne, C.2,
16th April, 1948.

Dr. F. E. Cox,
Senior Commonwealth Medical Officer,
Health Department,
A.C.A. Building,
118 Queen Street,
Melbourne, C.1.

Dear Dr. Cox,

Further to our recent correspondence on Streptomycin, it would be appreciated if you would supply answers to the following questions:

1. Who are members of the Committee in this State which controls the allocation of Streptomycin for the treatment of patients?
2. In the statement published in THE MEDICAL JOURNAL OF AUSTRALIA of 13th March, 1948, on page 350 it is stated that the use of Streptomycin is "recommended" in a series of conditions, and later it is stated, "When larger stocks of Streptomycin are available further trial is recommended" in another series of conditions, and that its use is "recommended" in certain non-tuberculous conditions. Would you be good enough to advise: (*a*) in the conditions where the use of Streptomycin is "recommended", is its use permitted by the Control Committee, and (*b*) has the time arrived when "larger stocks of Streptomycin are available", so that it may be used in the conditions listed under that section of the statement?
3. It is indicated in the statement referred to above that, with the exception of 100 grammes of Streptomycin held in each State, the Central Bank of the preparation is kept by the Senior Commonwealth Medical Officer in Sydney. Information available in Melbourne, however, is not in agreement with the foregoing, as I am informed by the wholesale drug houses that they are holding supplies which are allocated on the recommendation of the Committee. Is that so?
4. The statement further indicates that, with the exception of cases of influenzal meningitis, for the treatment of which Streptomycin will immediately be made available, all other cases for which it is desired must first be approved by the Committee. Information here, however, indicates that there are other conditions for which Streptomycin will be made available between meetings of the Committee, and if that is so, I would be glad if you would supply confirmation and advise what are the conditions other than influenzal meningitis for which Streptomycin may be made immediately available.
5. In what way may Streptomycin be obtained in cases of urgency when your office is closed?
6. Recommendation 3 from the Streptomycin Committee of the National Health and Medical Research Council indicates that progress reports are required by the State Committee, and that on the completion of treatment, full medical records should be sent to the Senior Commonwealth Medical Officer of the State. Would you be good enough to advise regarding the obtaining of the consent of patients for transmission of those records and what would be the position if consent were refused?
7. Under what authority, statutory or otherwise, is the control of Streptomycin exercised?

Yours faithfully,
(Signed) C. H. DICKSON,
Medical Secretary.

[COPY.]

Commonwealth of Australia,
Department of Health
(Victorian Division),
113 Queen Street,
Melbourne, C.1,
3rd May, 1948.

Dear Dr. Dickson,

I am forwarding herewith letter received by me from the Director-General of Health in reply to your letter of the 16th April, 1948:

(1) I am informed that the members of the State Streptomycin Committee of Victoria do not wish to have their names published. They are all medical men with senior degrees who are on the staffs of Teaching Hospitals.

(2) (*a*) Yes—if "Control Committee" means the State Streptomycin Committee.

(*b*) Extra stocks of Streptomycin have recently been made available in Australia, but it is uncertain how long they will have to last. The dollar position and the granting of export licences by the Government of U.S.A. control the amount imported.

(3) Yes.

(4) For all forms of meningitis in which Streptomycin has been found effective and for infections due to Klebsiella pneumoniæ supplies of Streptomycin are made available without waiting for the Committee to meet. No really urgent case would be deprived of an immediate supply.

(5) In cases of urgency, when the office of the S.C.M.O. is closed, supplies can be arranged by ringing Dr. F. E. Cox, LF 8296, Dr. H. M. Franklands, Haw. 6063, or Mr. W. A. Tyers, XY 1784. Small quantities could also be obtained from the Melbourne Children's Hospital.

(6) It is assumed that the patient's consent is obtained by the medical attendant. If consent were withheld supplies of Streptomycin would still be made available. The records are wanted for statistical purposes.

(7) Control of importation and distribution of Streptomycin is exercised by the Department of Trade and Customs. The only object of the control is to ensure, as far as possible, that the Streptomycin coming into Australia is used to the very best advantage.

A. J. METCALFE,
Director-General of Health.

Yours faithfully,
(Signed) F. E. Cox,
Senior Commonwealth Medical Officer, Victoria.

Dr. C. H. Dickson,
Medical Society Hall,
426 Albert Street,
East Melbourne, C.2.

The following letter is published at the request of the Victorian Branch.

[COPY.]

British Medical Association,
Tavistock Square,
London, W.C.1,
30th March, 1948.

Dear Dr. Dickson,

I am writing to express the gratitude of the Council of the British Medical Association for the generous gift of food parcels that the Victorian Branch of the B.M.A. has made to a very large number of members in this country.

Following your offer of the 7th October we dispatched to you no less than 552 names and we have heard from local Honorary Secretaries and members in industrial regions how appreciative the recipients of these parcels have been. Such a gesture on behalf of your members does much to strengthen the bonds between Australia and the Home Country, and I should be grateful if you would thank your Council and all the members concerned for their very generous gift in thinking of our welfare at this time.

With warm appreciation,

Yours sincerely,
(Signed) H. GUY DAIN,
Chairman of Council.

Dr. C. H. Dickson,
Medical Secretary,
British Medical Association (Victorian Branch),
426 Albert Street,
East Melbourne, C.2,
Australia.

Correspondence.

DIAGNOSIS OF GASTRIC DISEASE: SHOULD RADIOLOGY OF THE STOMACH BE ABANDONED?

SIR: The burden of a man's sins is heavy enough, without the addition of those which he has never committed. I would therefore like to deny some of those which have been charged upon me by those who discussed my recent paper on the radiology of the stomach.

Firstly, Dr. O'Sullivan, on behalf of the Australian and New Zealand Association of Radiologists, charges me with suggesting that radiology of the stomach be abandoned. I am not aware of having "suggested that". I remember "asking whether". The difference is fundamental. It stands out more clearly in the negative answer which I gave to my own rhetorical question. Not the abandonment of radiology, but for each patient, more and better radiology! Perhaps I pointed out that the all-too-common incomplete and therefore bad radiology should be abandoned, and that patients would sometimes be better without it. Dr. O'Sullivan's association should be the last to quarrel with this.

Secondly, Dr. Edwards takes me to task for attributing to hiatus hernia a surgical urgency which it does not usually possess. However, I was not concerned with hiatus hernia, but with a rent in the dome of the diaphragm due to a recent injury. I probably misled Dr. Edwards, through the brevity with which I described the case, and I regret this.

Thirdly, Dr. Frecker charges me with pointing the finger of scorn at the unhappy radiologist who misses incipient disease. I wish to decline this unsympathetic role. My criticism was directed, not against the making of mistakes, but against the making of mistakes through deliberately omitting from the examination a part which is shown to be essential by common sense, physical principles and radiological text-books. Would not Dr. Frecker be tempted to point the finger of scorn at a surgeon who would expose his patient to danger by omitting an essential part of the operation, for example, the closure of the abdomen?

Dr. O'Sullivan expresses the resentment of the Radiological Association against the method adopted by me in suggesting technical improvements. I feel sorry about this resentment, but I think it will be short-lived when my method is better understood. The suggesting of technical improvements was only a minor part of my paper, and it was not this part which necessitated the provocative method. The other and greater part was aimed at securing the adoption of those clinical and radiological methods which are already described in text-books, and in articles which appear once or twice a year in some part or other of the medical Press. These writings, in sober language and with conventional title, are probably not read, and perhaps even dismissed as platitudes (to use Dr. Hagarty's word). At any rate the substance of these articles is persistently neglected in practice by too many clinicians and radiologists. I felt that the provocative device would be most likely to attract the attention of those whose attention I most wanted. I had previously found that it secured the attendance at a monthly meeting of those who had not before been in the habit of coming to such meetings, and who would probably not have attended if a paper had been announced with a conventional title.

Of course, I stressed points which have been stressed before, but Seneca at least would understand, and would perhaps translate for us, *"nunquam nimis dicitur, quod nunquam satis discitur"*, "that is never said too often which is never learnt sufficiently".

Finally, Dr. Hagarty's points are beyond my understanding. He scorns the supine position as given in "Clark", because Clark is only a lay person! Only a technician! But half a dozen films in standard positions taken by such technicians would be far more acceptable to the gastro-enterologist than a report by a radiologist based upon an incomplete fluoroscopy and one or two films of the lower pole of the stomach. Templeton, one of the high priests of Dr. Hagarty's own order, also gives the supine position. But Dr. Hagarty in his role of defender of the dangerous incomplete examination manages to misinterpret Templeton by lifting his words from their context. Let us replace them and see. "The roentgenologist sets up a routine to enable him to examine each organ with a reasonable degree of accuracy and to give a clue to the existence of lesions which he may discover at the time or at some later date. It is not necessary for a roentgenologist to perform all the various tricks at his command, etc." He then goes on to describe the routine procedure, and in separate sections he describes the "various tricks" for special cases. The routine views include standing, prone and supine positions. Templeton's words cannot therefore be taken as a defence for omitting the supine position, and their use in this way is a distortion of their author's meaning.

Dr. Hagarty is shocked that I should presume to "even attempt(s) to give directions as to how gastric radiology should be performed", and he hopes that my paper will not tempt clinicians "to attempt to direct the technical side of the examination". One would not expect a radiologist, experienced in the care of patients and familiar with the background and development of radiology, to make such a point. He should appreciate too well the debt which is often owed by the individual patient, and by radiology in general, to the technical directions of those who are not themselves radiologists. Unlike Dr. Hagarty, I hope that my paper will lead clinicians to interfere when they suspect a pyloro-duodenal lesion and no serial films are taken; when they suspect a gastric lesion and the supine view and cardiac end are neglected; when they suspect an early lesion of the sigmoid colon and no film is taken after evacuation of the barium and no oblique views are taken to show the recto-sigmoid region in continuity; when, in a Graham's test, no film shows the whole liver to help exclude hydatid; and so on. The highest tradition of medicine demands that the clinician should interfere in such cases. The sanction for his interference is enshrined in no less a place than the First Aphorism of Hippocrates. It is almost unbelievable that I should have to point out to a radiologist that Divine Right, without good works, will not suffice to establish radiology or radiologists.

Yours, etc.,

V. J. KINSELLA.

225, Macquarie Street,
Sydney,
June 21, 1948.

THE PHARMACEUTICAL BENEFITS ACT, 1947.

SIR: I have read Dr. C. H. Jaede's letter with interest and calm reflection. I consider that to attempt to compare an act, commonly known as *The Dangerous Drugs Act*, with an act to provide "free" medicine for everybody is illogical.

Yours, etc.,

W. CLETUS SMITH.

Murwillumbah,
New South Wales,
June 10, 1948.

The Royal Australasian College of Physicians.

ANNUAL MEETING.

THE tenth annual meeting of the Royal Australasian College of Physicians was held at Brisbane on June 10, 11 and 12, 1948. At its meeting the office-bearers for the period 1948-1950 were inducted and the Council of the College is now constituted as follows: *President*: Dr. L. S. Latham (Victoria); *Vice-Presidents*: Dr. C. G. McDonald (New South Wales), Dr. Allan S. Walker (Australian Capital Territory), and Dr. C. H. Tewsley (New Zealand); *Censor-in-Chief*: Dr. A. Holmes à Court (New South Wales); *Honorary Secretary*: Dr. W. P. MacCallum (New South Wales); *Honorary Treasurer*: Dr. A. H. Tebbutt (New South Wales); *Councillors*: Sir Charles Bickerton Blackburn (New South Wales), Sir Trent Ch. de Crespigny (South Australia), Dr. O. A. A. Dietheim (New South Wales), Dr. J. G. Hayden (Victoria), Dr. Bruce Hunt (Western Australia), Dr. E. Britten Jones (South Australia), Dr. Alex P. Murphy (Queensland), Dr. W. S. Newton (Victoria), Dr. Harold J. Ritchie (New South Wales), Sir Sidney Sewell (Victoria), Dr. S. A. Smith (New South Wales), Dr. H. Hume Turnbull (New South Wales), Dr. A. E. Rowden White (Victoria), and Dr. Ian J. Wood (Victoria).

At the meeting of the General Body of Fellows the following members were elected under article 38 of the Articles of Association to Fellowship of the College: Dr. Harry Daly and Dr. W. I. T. Hotten, of New South Wales, and Dr. Hilary Roche and Dr. Robert Southby, of Victoria.

The following candidates who were successful at examinations held in Australia and New Zealand were admitted to membership of the College in Sydney on June 7, 1948, or at Brisbane on June 10, 1948: Dr. J. S. Boxall, Dr. Z. S. Freeman, Dr. C. W. G. Lee, Dr. T. Le Gay Brereton, Dr. G. L. McDonald, Dr. A. E. McGuinness, Dr. W. K. Manning,

Dr. P. A. Rundle and Dr. J. N. Walker, of New South Wales; Dr. M. J. Etheridge, Dr. J. M. Gardiner and Dr. A. C. Schwieger, of Victoria; Dr. J. M. McPhie and Dr. F. B. Turner, of South Australia; and Dr. J. D. Bergin, Dr. O. W. Chapman, Dr. R. S. Edward, Dr. G. P. Hallwright, Dr. A. C. Hayton, Dr. E. K. Macleod and Dr. W. J. Smith, of New Zealand.

Research.

THE ROYAL SOCIETY FOULERTON RESEARCH FELLOWSHIP.

THE attention of medical graduates is directed to the fact that applications are being invited by the Council of the Royal Society, London, for a Foulerton Research Fellowship in Medicine, tenable in any hospital or medical school in the British Isles or at any other place approved by the Council of the Royal Society. Candidates, who must be of British nationality and British parentage, should supply the usual personal details and give the names of two referees. Testimonials will not be considered. Applicants and referees at a distance may write direct to the address given below without first obtaining forms. The subject of the proposed research, and the place at which it would be carried out, together with the name of the head of the department, should be given.

The appointment, which will be for full-time work in any branch of medical research, will be made for two years in the first instance, from October 1, 1948, and may be renewed annually up to a total of five years. It will be subject to the conditions governing Royal Society research appointments. The stipend will be £850 *per annum*, with superannuation benefits to which the successful candidate will be required to contribute 5% of annual stipend and to which the Society will make a contribution of 10%.

Applications should be made on forms to be obtained from the Assistant Secretary, the Royal Society, Burlington House, London, W.1, and should be received as early as possible, in any case not later than August 1, 1948.

Obituary.

DAVID GIFFORD CROLL.

DR. DAVID GIFFORD CROLL, whose death was reported in these columns a few weeks ago, was for many years prominent in the activities of the British Medical Association in Australia. He spared neither time nor trouble in working for the advancement of his profession and made important contributions to its welfare in Queensland and in the wider federal sphere.

David Gifford Croll was born in Glasgow in 1885. His father, Andrew Usher Croll, left Scotland for New Zealand when Gifford was six months old. The family settled on Mercury Island, which the father bought, and turned its attention to cattle raising. The venture was not a success and the family moved to Waiheke Island, nearer to Auckland, and engaged in farming. These early days on the coastal waters of New Zealand gave Gifford Croll his love of the sea which lasted through his life, and he was never happier than when cruising or racing in his auxiliary yacht *Marian*. His education was commenced in New Zealand at Saint John's College, Auckland, where he was enrolled as a boarder. Later his parents came to Sydney and he spent the rest of his school days at Fort Street High School. In due course he entered the Medical School at the University of Sydney and graduated as Bachelor of Medicine and Master of Surgery in 1910. Soon after graduation he became resident medical officer at the Brisbane General Hospital and subsequently served as a resident officer at the Hospital for Sick Children, Brisbane, which was then under the control of an independent board. He remained at the Hospital for Sick Children for some years and eventually served as medical superintendent.

Croll was always interested in pædiatrics and intended to specialize in this subject. However, he changed his mind and became a general practitioner. First of all, he occupied rooms previously used by Peter Bancroft on Wickham Terrace and he also practised round the home that he built in Sherwood. It was probably here that he did his best work. He practised for thirty-five years at Sherwood and became widely known and beloved. His life as a general practitioner was interrupted by service in the two world wars, but this probably served to endear him still further to those among whom he lived. It has been said that he was a tower of strength in time of trouble and a man of sure counsel. One of his brother practitioners has described him as a fine example of the family practitioner who was known to many of his patients from the day he brought them into the world, as he had brought many of their fathers before them.

Croll was appointed to the honorary medical staff of the Brisbane Hospital for Sick Children as out-patient physician in 1912, and in the same year he was appointed pathologist to the laboratory that he had been instrumental in starting—he was its first pathologist. In 1913 he became physician to in-patients and the following year was granted leave of absence for war service. On his return from active service he resumed his work as in-patient physician and continued to serve in this capacity until his retirement from the active staff in 1932. Although he retired, he still maintained his interest in the work of the institution and often discussed its problems with those who had succeeded him.

Croll served for many years on the Council of the Queensland Branch of the British Medical Association and held the office of president. He represented the Queensland Branch on the Federal Committee in 1927 and later on the Federal Council, when that body was established. He retired from the Federal Council only when he went on active service during the second world war. From 1929 until the time of his death, Croll was a director of the Australasian Medical Publishing Company, Limited, and gave of the best that was in him to further the interests of this journal.

Croll began his military career in 1910 when he was commissioned as captain in the Citizen Forces. In 1914 he became major in the Australian Army Medical Corps. For a period of two months in 1914 he acted as principal medical officer of the First Military District. In 1915 he joined the First Australian Imperial Force as major and second-in-command of the Second Light Horse Field Ambulance. From 1916 to 1917 he commanded this unit. From 1917 to 1919 he was assistant director of medical services of the Australian and New Zealand Mounted Division and in 1919 he served as deputy director of medical services in Egypt. For his services he was created Commander of the Most Excellent Order of the British Empire.

In the second world war Croll commanded a camp hospital in 1940. In 1941 and 1942 he was commanding officer of the 112th Australian General Hospital, and from August,

1942, to March, 1944, he commanded the 101st Australian Convalescent Depot. He was placed on the retired list in July, 1944.

Croll always gave the impression of being a placid person, but he could be roused to enthusiasm. Once he became convinced of the rightness of a course of action he could not be made to deviate from it. He was tenacious in argument and conscientious in any cause that he espoused. A colleague has written that, despite his busy practice and all his other activities, he found time for medical reading and that when he was satisfied as to the efficacy of a new technique or of a new drug he would be ready to use it. His rugged nature was not one to be "carried about with every wind of doctrine". He would move conscientiously and appeared to take to heart Saint Paul's advice to the Thessalonians to "prove all things, hold fast that which is good".

He married in 1912 Miss Marion Winifred Payne. He had three brothers, one of whom is a medical practitioner. To his widow who survives him, his many friends will offer sympathy.

Dr. T. A. Price writes: It was my privilege for a number of years to be a colleague of Gifford Croll on the Federal and Queensland Branch Councils.

He was one of our best members, a good example of independence combined with cooperation, and, incidentally, a very pleasant man with whom to work. The main years of his professional life were spent as a general practitioner in the same district in Brisbane.. I do not know whether he was author of the idea, but I do think he started a new way of solving the problem of the overworked medical man. This was not to get an assistant or a partner. He looked round for a good reliable man who wanted to settle down in practice and invited him to become a "friendly rival". The first man was such a success that a second started in the same way in this district. This made it easy for all of them to get away for alternate week-ends and for efficient service during holidays or when sickness prevailed.

Croll took a keen and practical interest in the scout movement. He was particularly interested in the Sea Scouts and only three years ago he climbed the mast of his sailing boat. He had a cultured mind and a rare gift of courage. He loved beautiful things. The sea and all connected with it were his hobby and his delight.

Dr. L. Crawford writes: Dr. David Gifford Croll came to the Hospital for Sick Children as a resident medical officer and was not long on the staff when he realized the need for some kind of diagnostic laboratory. He sent me a telegram while I was still at school in December, 1911, offering me the post of "Clinical Assistant" to the hospital, which, in effect, turned out to be the first clinical pathological laboratory appointment in any Queensland hospital. Thus Dr. Croll laid the foundation of the present Department of Pathology, serving all the hospitals under the Brisbane and South Coast Hospitals Board, with a staff of about forty.

Dr. Croll in his youthful enthusiasm realized the place science would take in the medicine of the future, and his inspiration, technical efficiency and sound knowledge have been carried over right into the present.

The scope of the work done in the small two-room laboratory was surprising in its range for so early a time. At that time filariasis was common in Brisbane and every patient admitted to the Hospital for Sick Children was tested as a routine. Tuberculin tests by the von Pirquet technique were commonly done, but the bulk of the work was hæmatology, diphtheria diagnosis, typhoid diagnosis by the living culture hanging-drop method and investigations for ankylostomiasis.

The first equipment consisted of an incubator, paraffin oven, dry heat sterilizer, Cambridge rocker microtome and a hand centrifuge. He was always careful of the prestige of his little department and wished to maintain good relations always with the clinic, medical and nursing staffs. Amongst other ways of doing so, he made a rule that glass connexions made in the laboratory for the wards should always have smoothed ends to facilitate quick use. When the long-proposed complete laboratory service for the hospitals is completed, it is hoped Dr. Croll's name will not be forgotten. From the time he entered private practice, Dr. Croll had always been our family doctor: the efficiency and devotion he showed in his laboratory work was always evident in the care, interest and attention he unfailingly gave his patient, whether an old man of ninety, a baby or young girl of eighteen. Mrs. Croll showed always the same enthusiasm in his work and was untiring in her efforts to help those in need. Dr. Croll's name will be cherished by those who knew him and particularly by those who, like myself, owe so much to his inspiration.

Dr. T. H. R. Mathewson writes: By the death of Dr. Gifford Croll the profession in Brisbane has lost a colleague who has rendered distinguished service to the British Medical Association as well as to the community as a whole. During his long association with the Children's Hospital, Brisbane, first as resident medical officer and later as honorary visiting physician, he was responsible for much that increased the efficiency of the hospital. His work on the treatment of diphtheria alone was of outstanding merit.

His memoir to his old chief at the Children's Hospital, the late Dr. Jefferis Turner, recently published in THE MEDICAL JOURNAL OF AUSTRALIA, which was written at a time when he was suffering from an illness shortly to terminate his own life, was a labour of love and loyalty to which he devoted himself with characteristic thoroughness and enthusiasm.

The time he gave and the trouble to which he went in going through old records and journals are known only to those with whom he was associated. The more he searched, the more impressed he became by the evidence of the amazing industry and scintific acumen of his old chief.

Those of us who were associated both with him and with the late Dr. Jefferis Turner feel we owe Dr. Gifford Croll a debt of gratitude for the tribute he has paid to a man whose name will go down in the history of medicine as that of one of our foremost pædiatricians.

CYRIL JOSEPH FALLON.

WE are indebted to Dr. W. J. McCristal for the following appreciation of the late Dr. Cyril Joseph Fallon.

I first met Cyril Fallon thirty years ago when residents together at the Coast Hospital. One was soon attracted by his clarity of thought and diction and his insatiable regard for logic and truth. Though his worthiness literally made one quake, he was really very tolerant and human and irked exceedingly by any inference that the other fellow's ideological standards fell short of his own, that he himself exceeded the norm or that he was not of the world, worldly.

Many years ago Fallon, who as implied above was a deeply religious and spiritual man, resigned himself, out of a sense of duty, to a term in Parliament. His motivation was mainly the furthering of the cause of sociological medicine and to seek redress for and recognition of the fact that some denominational schools found occasion to provide at their own expense, instruction in the Christian way of life, usually, as he saw it, neglected by government institutions. In debate he introduced a tone of ethics which, if ever attained, was certainly not exceeded in any Parliament, and that noble and inspiring man, the Premier of the day, the late Sir Thomas Bavin, had a profound respect and admiration for him.

In hands other than Fallon's, his strivings even in forbearing hearts might have born the implications of sectarianism, and though all sections of the House were impressed by the validity, logic and reason of his arguments, it was with some naïveté that he hoped to sway the vote.

Cyril Fallon's outlook was that of the well-bred democrat. Nostrums of political expediency such as the socialization of medicine were anathema to him, and should this projected legislation become effect, it is a sad and paradoxical reflection that his type of doctor will become extinct.

He was ever solicitous for the patients' financial commitments, very sound and wise in the art of medical practice, and though never averse to availing himself of the specialities, he kept the exponents thereof, as it should be, in balance, and woe betide his colleague whose premises were weak. His social and professional circle have certainly lost a wise counsellor and true friend—the community at large one of the true aristocracy of intellect.

CHARLES GEORGE RICE.

THE following appreciation of the late Dr. Charles George Rice has been received from Dr. Kevin Byrne.

The death of the late Charles Rice, Medical Superintendent of Canterbury District Memorial Hospital, is a great loss to the hospital and to the profession. A good organizer, good clinician, a hard worker, a good teacher to the nursing staff, a very good anæsthetist, he was very widely read in all branches of his professional art, particularly orthopædics. No matter at what hour of the night an honorary would be called to the hospital one would be sure to see Rice about

in the offing. Possibly because of asthma he could not sleep well, but interest in any emergency always brought him to the ward no matter which resident was responsible for the case. At heart a kindly man, he tried unsuccessfully to hide his soft nature behind a façade of apparently gruff speech. He was fair, efficient and obliging to the honoraries and thoughtful to the residents, for whom he tried to get clinical experience, and also to wangle operative experience for them from the surgeons. Charles will be missed by his widow and son and by his professional brothers in the British Medical Association.

CECIL NEVILLE RAPHAEL.

WE regret to announce the death of Dr. Cecil Neville Raphael, which occurred on June 18, 1948, at Melbourne.

Nominations and Elections.

THE undermentioned has applied for election as a member of the New South Wales Branch of the British Medical Association:

Housego, Christopher John, M.B., B.S., 1947 (Univ. Sydney), 3, Woonona Avenue, Wahroonga.

The undermentioned have applied for election as members of the South Australian Branch of the British Medical Association:

Painter, Rowland George, M.B., B.S., 1947 (Univ. Adelaide), 14, North Terrace, Highgate.

Rosenberg, Mendel Wolf, M.B., B.S., 1942 (Univ. Adelaide), McLaren Vale.

Kaufman, Hermann, L.R.C.P., L.R.C.S. (Edinburgh), L.R.F.P.S. (Glasgow), 207, King William Road, Hyde Park.

Medical Appointments.

Dr. L. L. Grimmett has been appointed medical officer, Brisbane Mental Hospital, Goodna, in pursuance of the provisions of *The Public Service Acts, 1922 to 1945*, and *The Mental Hygiene Act of 1938*, of Queensland.

Dr. H. E. Pellew has been appointed honorary assistant gynæcologist at the Royal Adelaide Hospital, Adelaide.

Dr. A. C. McEachern has been appointed honorary visiting medical officer (surgical) to the Northfield Wards at the Royal Adelaide Hospital, Adelaide.

Dr. B. L. W. Clarke has been appointed to represent the Government as assessor with the Medical Assessment Tribunal, in pursuance of the provisions of *The Medical Acts, 1939 to 1946*, of Queensland.

Dr. E. J. Davies has been appointed government medical officer at Julia Creek, Queensland.

Books Received.

"Normal and Abnormal Psychology: A Précis for Junior Students, Nurses, Occupational Therapists, Welfare Workers and Others", by J. Ernest Nicole, O.B.E., D.P.M.; 1948. London: George Allen and Unwin, Limited. 8¼" × 5¼", pp. 104.

"Medical Physics for Medicine I", by H. C. Webster, D.Sc., Ph.D., F.Inst.P., and D. F. Robertson, M.Sc., A.Inst.P.; 1948. Brisbane: University of Queensland. 9¾" × 6¼", pp. 324, with illustrations. Price: 54s.

"The Natural Lighting of Industrial Buildings: Factory Planning"; Part II, Bulletin Number 11; 1948. Commonwealth of Australia: Industrial Welfare Division, Department of Labour and National Service. 9¾" × 7", pp. 90, with many illustrations. Price: 2s.

"Gynæcological and Obstetrical Anatomy", by C. F. V. Smout, M.D., M.R.C.S., with chapters on The Histology of the Female Reproductive Tract and its Endocrine Control by F. Jacoby, M.D., Ph.D.; Second Edition; 1948. London: Edward Arnold and Company. 8¾" × 5½", pp. 260, with many illustrations, some of them coloured. Price: 40s.

"The Nature of Disease Institute: First Annual Report", by J. E. R. McDonagh, F.R.C.S., edited by Mark Clement; 1948. London: William Heinemann (Medical Books), Limited. 8¾" × 5¼", pp. 190. Price: 21s.

"An Introduction to Medicine for Nurses", by Patria Asher, M.D., M.R.C.P., with a chapter on Mental Ill-Health by Portia Holman, M.A., M.R.C.P., D.P.M.; 1948. London: William Heinemann (Medical Books), Limited. 8¼" × 5¼", pp. 434, with many illustrations.

"The Pathology of Nutritional Disease: Physiological and Morphological Changes which Result from Deficiencies of the Essential Elements, Amino Acids, Vitamins and Fatty Acids", by Richard H. Follis, Jr., M.D.; 1948. Oxford: Blackwell Scientific Publications, Limited. 10" × 6¾", pp. 306, with many illustrations. Price: 35s.

Diary for the Month.

JULY 13.—New South Wales Branch, B.M.A.: Executive and Finance Committee.

JULY 13.—New South Wales Branch, B.M.A.: Organization and Science Committee.

JULY 15.—Victorian Branch, B.M.A.: Organization Subcommittee.

JULY 19.—Victorian Branch, B.M.A.: Finance, House and Library Subcommittee.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

New South Wales Branch (Honorary Secretary, 135, Macquarie Street, Sydney): Australian Natives' Association; Ashfield and District United Friendly Societies' Dispensary; Balmain United Friendly Societies' Dispensary; Leichhardt and Petersham United Friendly Societies' Dispensary; Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney; North Sydney Friendly Societies' Dispensary Limited; People's Prudential Assurance Company Limited; Phœnix Mutual Provident Society.

Victorian Branch (Honorary Secretary, Medical Society Hall, East Melbourne): Associated Medical Services Limited; all Institutes or Medical Dispensaries; Australian Prudential Association, Proprietary, Limited; Federated Mutual Medical Benefit Society; Mutual National Provident Club; National Provident Association; Hospital or other appointments outside Victoria.

Queensland Branch (Honorary Secretary, B.M.A. House, 225, Wickham Terrace, Brisbane, B.17): Brisbane Associated Friendly Societies' Medical Institute; Bundaberg Medical Institute; Brisbane City Council (Medical Officer of Health) Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL or position outside Australia are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.

South Australian Branch (Honorary Secretary, 178, North Terrace, Adelaide): All Lodge appointments in South Australia; all Contract Practice appointments in South Australia.

Western Australian Branch (Honorary Secretary, 205, Saint George's Terrace, Perth): Wiluna Hospital; all Contract Practice appointments in Western Australia. All government appointments with the exception of those of the Department of Public Health.

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